Volume 70

Lingua

International Review of General Linguistics

Revue Internationale de Linguistique Générale

Editors J. G. Kooij
E. C. García
N. V. Smith
Executive Editor T. Hoekstra

Honorary Editor A. J. B. N. Reichling†

1986

Elsevier Science
Publishers B.V.
(North-Holland)
Amsterdam

Lingua 70 (1986) 241–284. North-Holland

JACALTEC NOUN CLASSIFIERS

A Study in Grammaticalization

Colette G. CRAIG

University of Oregon, USA

Received June 1986; revised version November 1986

The study of the Jacaltec noun classifier system provides a unique opportunity to observe the gradual evolution of lexical systems into grammatical ones, through a stage of syntacticization. Jacaltec noun classifiers are an uncommon type of classifier system, distinct from more lexical numeral classifier systems and from more grammatical noun class and gender systems. They are a recent innovation with clear nominal origin but they function syntactically as determiners of thematic saliency and anaphoric pronouns tracing coreferentiality.

1. Introduction

The purpose of this paper is two-fold. One is to describe in detail the functioning of a relatively uncommon and little documented type of classifier system and the other is to demonstrate how this uncommon type of classifier system constitutes a particularly interesting case of grammaticalization which fills a gap in the continuum from lexical noun categorization to morphological noun classification. The data is from a Meso-American language of the Mayan family, and the type of classifier under study is a noun classifier system which is uncommon even within the Mayan family.

A concerted effort at describing the variety of classifier languages of the world and at outlining some of their typological features is presented in Craig (1986a). This collective work of linguists, anthropologists and psychologists established how the study of classifier systems can bear significantly on various issues of the analysis of natural languages. To deal with classifiers is to deal with a wealth of data that had, by and large, been set aside in the elaboration of semantic and grammatical theory, presumably because of their being perceived as somewhat unruly and marginal systems. As the studies of the recent collection show, classifiers offer an interesting challenge to our understanding of the organization and evolution of semantic systems (Lakoff (1986))

0024-3841/86/$3.50 © 1986, Elsevier Science Publishers B.V. (North-Holland)

and contribute valuable data to the exploration of the relation of cognition and culture to language. The collection includes an initial analysis of the Jacaltec noun classifier system (Craig (1986b)) which focuses on its semantics and demonstrates the cultural motivation behind the selection of the classifiers.

The study of classifiers may also contribute to a better understanding of the process of grammaticalization, as it provides further evidence for the lexical origin of certain grammatical closed sets of morphemes. The present study focuses on the unusual integration of the Jacaltec noun classifiers into the morpho-syntax of the language, with the goal of documenting a classification system intermediate in its degree of grammaticalization between the more lexical numeral classifiers and the more morphological gender systems. By doing so, this study adds support to a theory of a gradual evolution of grammatical forms out of lexical ones.

The discussion of the grammaticalization of this particular system of classifiers will start with an overview of the lexical and syntactic characteristics of classifier systems in general, to provide an assessment of the place of the one under investigation within a typology of classification systems. A presentation of the semantics of the system will then follow as a way of arguing for the lexical origin of the system prior to examining its grammaticalization. The grammaticalization of the classifiers itself will be discussed in two steps: first to show how the classifiers are grammatical rather than lexical morphemes, and second to investigate their syntactic use as determiners and pronouns.

2. On classification systems

2.1. A lexical–grammatical continuum of classification systems

All languages make use of linguistic classification to some degree: that is, all languages have means of regrouping names of objects into semantic classes. The linguistic expression of classification covers a span from entirely lexical to entirely grammatical with lexico-syntactic systems at mid point. Entirely lexical classification is what is found in taxonomies. For good examples of Mayan taxonomies, see for instance the Tzeltal Mayan plant classification as described in Berlin, Breedlove and Raven (1974), and the Tzeltal Mayan animal classification found in Hunn (1977). On the other hand, the most grammatical systems of classification are gender systems, with their characteristic inflectional morphology. Typical of such grammatical systems are the Indo-European gender systems. Classifier systems have an intermediate lexico-syntactic linguistic status, in between purely lexical taxonomies and

purely grammatical genders. Classifier systems are close to, but more grammatical than quantifying expressions like unit counters (as in a *slice/chunk/loaf of bread*; *a pair of gloves/shoes/earrings*), which are slightly syntacticized lexical categories to the extent that they form paradigmatic sets.

The relative position of classification systems on the lexical–grammatical continuum is illustrated below:

lexical	⟶ lexico-syntactic ⟶	grammatical
taxonomies; unit counters	'classifiers'	noun classes; genders

2.2. *The Jacaltec classifying systems*

Jacaltec, a language of Guatemala from the Kanjobalan branch of the Mayan family of languages has been described in Day (1973a, b), Craig (1977, 1979), and Datz (1980).[1] Jacaltec is a language which is rich in classifying systems. It possesses four which can be placed at various points on a continuum of grammaticization, from a set of free lexical morphemes to two systems of an inflectional nature which function as grammatical concord within the noun phrase, with the noun classifiers under consideration at a midpoint.

Data on the four classifying systems can be found scatterred in various sections on morphology and syntax in Day (1973a: 40, 59–61, 67–71) with the original list of noun classifiers appearing in an appendix (Day (1973a: 125–126)). An introduction to the semantics and the relation of the classifier system to the Jacaltec culture can be found in Craig (1977: 39–511) and Breitborde (1980), and a more thorough discussion in Craig (1986b).[2]

[1] Este estudio esta dedicado, en solidaridad y paz, a Maria Trinidad Montejo, Antonio Feliciano Mendez, Baltazar Diaz, Alejandro Camposeco, y al pueblo jacalteco.

[2] The data were collected in the course of various trips to Jacaltenango, department of Huehuetenango, between 1969 and 1980. The orthography used is the local variant form of the official Guatemalan orthography for Mayan languages:

p		t			c		7
b'		t'			c'	k'	
		tz	ch	tx			
		tz'	ch'	tx'			
	f	s	ẍ	x	j		h
m		n			n̈		
		l					
		r					
w					y		

where b' [p'], c [k] and k' [q'], tx [č] and x [š], tz [¢].

One system of classification is a set of *number classes*. Day (1973a: 40) refers to them simply as inflectional suffixes with no explicit mention of their classificatory function. They correspond to a morphologized system of what in other languages would be numeral classifiers. These number class markers are obligatorily suffixed to the numerals and are in a limited set of three: *-wañ* '+human', *-c'oñ* '+animal', *-(e)b'* '+inanimate'.

The second system of classification consists of a set of *plural classes*, given the general label of plural particles in Day (1973: 69). This system is even more limited than the preceding one: it is composed of only two overt markers which are in opposition to each other and to the absence of overt marker, forming also a three way opposition: *heb'* '+human', *hej* '+animal', ∅ '+inanimate'.

The two overt markers vary in use, *heb'* being an obligatory morpheme, and *hej* an optional element of the noun phrase.[3]

Thirdly, Jacaltec has very large sets of classifying lexemes which Day (1973a) refers to as numeral classifiers but which are more akin to the *measure terms* found in English (also called unit counters) than to the South-East-Asian numeral classifier systems, in that they appear only in classifying expressions such as:[4]

(1a) ox(-eb') motx ixim
Nb-Nb class Measure noun
3-inanimate basketfull corn
'three basketfuls of corn'

(1b) ox(-c'oñ) chehal ixim
Nb-Nb class Measure noun
3-animal horseload corn
'three horseloads of corn'

[3] According to Day (1973: 69) the plural classifier *hej* may be used with some humans, specifically words for kin when they are not accompanied by their noun classifier. Plural marking by *hej* is optional when the context has established a plural meaning for the NP.

[4] Day distinguishes three classes of these measure terms, depending on the stem class from which they are recruited: (1) object numeral classifiers, ex: *ca c'olan k'oye* 'two balls of dough' (*c'olan* 'spherical'), (2) quantity numeral classifiers, ex: *ca pulato chib'e* 'two plates of meat', and (3) action numeral classifiers, ex: *hun pil* 'one push', *oxb'ik'* 'three actions of swallowing' (Day (1973a: 59–61)). No systematic study of the Jacaltec measure terms has been carried out but it is clear that their use is different from the use of the well-known Tzeltal system of numeral classifiers (Berlin (1968)), mostly in their low frequency and their strictly classifying function.

(1c) ox-eb' nimejtaj c'alan si7
Nb-Nb class intensif Measure noun
3-inanimate bundles wood
'three big bundles of wood'

Finally there are *noun classifiers* which classify concrete objects of the world and spiritual entities into twenty four classes. The noun classifiers are free morphemes which precede the nouns they classify. On the basis of the semantic principles that govern the choice of classifiers for given nouns, the classifiers fall into two subsets, one classifying the human and spiritual world and the other classifying the non-human world. Following Denny (1976) one would say that the domain of the former is that of social interaction and the domain of the latter is that of physical interaction. The complete inventory of classifiers is given in table 1.

Table 1

Subsystem I: Social interaction	
1. Cumam	Male deity
2. Cumi7	Female deity
3. Ya7	Respected human
4. Naj	Male non-kin
5. Ix	Female non-kin
6. Naj ni7an	Young male non-kin
7. Ix ni7an	Young female non-kin
8. Ho7	Male kin
9. Xo7	Female kin
10. Ho7 ni7an	Young male kin
11. Xo7 ni7an	Young female kin
12. Unin	Infant
Subsystem II: Physical and functional interaction	
13. No7	Animal
14. Metx'	Dog
15. Te7	Plant
16. Ixim	Corn
17. Tx'al	Thread
18. Tx'añ	Twine
19. K'ap	Cloth
20. Tx'otx'	Soil/dirt
21. Ch'en	Rock
22. Atz'am	Salt
23. Ha7	Water
24. K'a7	Fire

Examples of the four systems of linguistic classification found in Jacaltec – the measure terms, the noun classifiers, the number classes and the plural classes – are given below. The examples illustrate the use of the three *number classes* (Nbcl), the two overt *plural classes* (Plcl), three of the twenty four *noun classifiers* (Ncl) and one *measure term* (Measure):[5]

(2) NUM + Nbcl Plcl Ncl NOUN
ca-wan̈ heb' naj winaj
2-human human man man
'the two men'
ca-c'on̈ (hej) no7 nok'
2-animal animal animal animal
'the two animals'
ca-b' te7 n̈ah
2-inanimate plant house
'the two houses'

(3) NUM + Nbcl Measure Noun
ox-(eb') motx ixim
3-inanímate basketful corn
'three basketfuls of corn'

[5] On first appearance a certain type of concord seems to operate between the noun, number, and plural classifiers:

NUM + Nb class	Pl class	N Class	NOUN
ca-wan̈	*heb'*	*naj*	*winaj*
2-human	human	human	man

'the two men'

However they can be shown to be agreements between the noun and each one of its classifiers, and not a concord between the different types of classes. The absence of concord becomes obvious in instances of clashes between the different classifications. For instance, while the number and plural classifiers strictly distinguish animals from inanimate objects, the noun classifier *no7* classifies not only animals but also animal products such as milk, eggs, or objects made of leather. Whereby *no7* may classify either animals or inanimate objects. The independent number/plural and noun classifier semantic agreements with a countable noun which is an inanimate object for the purpose of counting but an animal product for purpose of classification is illustrated below:

ca-b' no7 ẍila
2-inanimate animal chair
'two saddles' inanimate objects made of animal product.
*ca-c'on̈ hej no7 ẍila
2-animal animal animal chair

It is specifically the noun classifier type of system which is the focus of this paper. It is a less-known type of classifier system which is of interest because of the position it occupies on the lexical to grammatical continuum of classifying systems mentioned earlier.

2.3. Definition of classifier systems as lexico-syntactic systems

Two sets of criteria can be used to distinguish typical classifier systems from unit counters and taxonomies on the lexical end of the continuum and from noun classes and gender systems on the grammatical end.

The first set is meant to distinguish classifiers from unit counters and taxonomies. It is a synthesis of the criteria proposed by Dixon (1964, 1983, 1986) and Allan (1977) and consists of the requirements of (1) an *overt* indication of the classes, with (2) the proviso that said overt identification is not entirely restricted to classifying use.

Criterion (1) is a morphological criterion which states that there must be a set of classificatory morphemes in the language. In terms of part-of-speech classification, these morphemes are usually noun adjuncts which constitute a grammatical category of their own. The requirement that the classes be morphologically marked is what distinguishes classifier systems from taxonomies of folk classification, since folk taxonomies are generally not fully explicit. In English, for instance, there is no linguistic marker systematically accompanying the words 'spoons', 'knives', and 'forks' to indicate that they all belong to the same class of 'silverware', or that 'pine', 'spruce', and 'fir' belong to the class of 'evergreens'.

Criterion (2) is a morphosyntactic criterion which determines the degree of integration of the classificatory morphemes into the grammatical organization of the language. The mere existence of classificatory morphemes is not sufficient to distinguish a classifier system proper from other classifying systems such as the unit counter systems. One way to define the difference is to add the requirement that such morphemes not be used uniquely in classificatory expressions. The unit counters of English will not meet the requirements. In expressions such as *a slice/piece/hunk/loaf of bread, a sheet/piece/ream of paper* the unit counters *slice/piece/hunk/sheet/ream* always function to classify by some criteria the objects they introduce, in this instance according to a semantic criterion of shape. Classifiers, on the other hand, have a noticeable degree of autonomy from their strictly classifying semantic function. They are

often found obligatorily accompanying other noun adjuncts such as quantifiers and demonstratives without seemingly contributing classificatory function.

While this first set of criteria points to a definition of classifier systems as morphological systems of a morpho-syntactic rather than a purely lexical nature, the second set of criteria aims at distinguishing between classifiers and noun classes or gender systems on the grammatical end of the continuum. The difference between the two types of classifying systems is a matter of degree of grammaticalization, with noun classes and gender systems constituting maximally grammaticalized categories and sets of classifiers representing a more mixed lexico-syntactic system.[6]

The second set of criteria is based on the work of Dixon (1983, 1986) and consists of:

(1) the size of the inventory of the classes and their exhaustiveness,
(2) the nature of the classificatory morphemes themselves, and
(3) the grammatical functioning of the markers of the class.

Criterion (1) contrasts the usually small closed sets of gender/noun classes which obligatorily classify all nouns of the language with the general tendency of sets of classifiers to come in great numbers counted by scores, to *not* classify *all* the nouns of a language, and to rarely form by themselves a closed morphological set. Criterion (2) refers to the fact that classifiers are *root* morphemes, most often free morphemes, while noun classes are marked through affixes, often of portmanteau nature (class + number + case). Criterion (3) refers to the fact that classifiers have the same broad grammatical status as nouns; they may even function as a subset of the open lexical class of noun in that they anaphorically represent the noun, while noun class markings are never entirely within the noun word but rather trigger concord with some other word in the sentence.

[6] Allan (1977) had discussed four types of classifier systems, two common types that he refers to as concordial and numeral, and which correspond to the noun classes and the sets of classifiers of Dixon, and two much less common ones that he refers to as predicate and intralocative types, and that Dixon subsumes to the other types. See Mithun (1986) and Suppalla (1986) for an account of predicate classifier systems in a North American Indian language and in American Sign Language, and Dixon (1983) for an intralocative classifier system in an Australian language.

2.4. *The Jacaltec noun classifier system in perspective*

As we have seen the Jacaltec noun classifier system is one of four classification systems in the language which range from the morphological (inflectional) type of the number classes to the lexical open-ended type of the measure terms – the former akin to the Indo-European gender system, the latter to the well documented Tzeltal Mayan numeral classifiers (Berlin (1968)) or, closer to home, to the English unit counters. The number and plural classes, which are affixes rather than roots or free lexemes, and small closed sets classifying all the nouns of the language without exceptions, are clearly grammatical systems. The lexical set of measure terms in contrast consists of roots of various origins in an undetermined large number.[7]

It is between these two end points of the lexical–grammatical continuum that the noun classifier system presently under study stands. Within the Jacaltec language itself it therefore constitutes an intermediate type in the process of grammaticalization, between measure terms and two types of noun classes:

(4) Jacaltec classifying systems:
lexical...measure terms > *noun classifiers* > number classes > plural classes...grammatical

To establish this intermediate position of noun classifiers is to strengthen the postulate of the continuum itself, and to provide empirical evidence for a yet undocumented step in the process of grammaticalization, involving the syntacticization of the classifiers.

3. The Jacaltec noun classifiers: semantics

Before discussing the grammaticalization of the Jacaltec noun classifier system, this section will show its lexical nature.

[7] Typical examples of noun class systems are found in the Bantu languages. Various studies consider them the product of a process of grammaticalization of classifier systems, such as Denny and Creider (1986), Givon (1970), Greenberg (1977, 1978), and references therein.

Meanwhile, the least grammaticalized of all classifying systems which satisfy the criteria presented above for the identification of classifier systems are the numeral classifier systems. Typical examples of such systems are the numeral classifiers of East and South East Asian languages such as Chinese, Tai, Burmese, or Austroasiatic, for which descriptions and references may be found in Craig (1986a) under Erbaugh, DeLancey, Becker and Adams, respectively.

3.1. Two subsystems of classification

As previously mentioned, the noun classifier system is divided into two sets of classifiers which correspond to semantically distinct sub-systems on the basis of the different classificatory principles which operate within them. The system of social interaction classifies the Jacaltec human and spiritual world while the subsystem of physical and functional interaction classifies the non-human world.

One unusual aspect of the Jacaltec noun classification system is the mere existence of two separate systems, another being the fact that the two subsystems are evenly balanced, with a dozen classifiers each. While the exact inventory of the classifiers may be subject to some discussion, and while the seemingly perfect balance between the two subsystems may be no more than accidental, the basic evenness of the distribution between the number of classifiers for social interaction and for physical and functional interaction invites comment. It is rare to find among the classifier languages of the world such fullness of classification in all the interaction domains at once, the more common situation being for one or the other domain to be the most developed.

3.2. The social interaction classifiers

The semantic features with which the classifiers of social interaction can be analyzed are those of divinity, kinship, respect, sex and age.[8]

The subsystem of classification of the domain of social interaction contrasts with the other subsystem of classification of the language by the fact that a certain amount of dynamism is built into it, in that the noun classifier attributed to any one human being varies in accordance to the speaker's relationship to and attitude toward the person being talked about. The semantic features of kinship and age/respect by definition will make the system speaker-oriented.[9]

[8] Such a system represents an exception to the claim made by Adams and Conklin (1973: 3) that human classifiers are organized according to either social rank parameters (age, wealth, nobility, sacredness, occupation) or to kinship, but not both at once. The Jacaltec system combines the social rank parameters of age, respect, and divinity with the inherent semantic notions of sex and kinship.

[9] A certain person will be classified with different classifiers by kin and non-kin speakers. For instance, a man in his forties who has special status in the community by virtue of being knowledgeable, or rich, or powerful (shaman, dignitary of religious organization, influential store

Additional dynamism in the system is provided by verbal play of a very limited nature. Along the parameters of respect, one may express extra positive or extra negative feelings toward the person referred to by bestowing or withholding expression of respect in an unexpected fashion.[10] Although the verbal manipulation of human classifier which is available to speakers is both of a very restricted nature and rarely used, its existence sets apart this subsystem of classifiers from the other.

3.3. Physical and functional interaction classifiers

The second subsystem of noun classifiers organizes the world of concrete objects with which humans interact. A striking characteristic of this Jacaltec subsystem is that the classification is still semantically transparent. There is no polysemy in the semantic features of the different classes, as is common in many classificatory systems. In addition, there is no residual class. Nouns, therefore, either belong to a specific, predictable class, or they remain unclassified.

This subsystem of classifiers differs from the first in that it constitutes a rigid system in which no possibility of reclassification is available. This total absence of dynamism in the classification is tied to a peculiarity of the Jacaltec system which is that the classification is based on the identification of a single semantic feature of the object to be classified: the material of which it is made. Following this classificatory principle, animals, animal parts, and animal products such as leather shoes, woolen blankets and beewax candles all belong to the animal class. The system relies also, to a very limited extent, on the semantic features of consistency and perceptual analogy, so that ice and hail, as well as all glass and metal objects, are classified in the rock class. In

---

owner) could be referred to as *naj* by his contemporaries and elders, as *ho7* by his close relatives, and as *ya7* by the younger generations and his contemporaries who are not close friends or neighbors.

[10] It is a form of insult to classify as *ix/naj* a person of great age or fame who is expected to deserve the classifier *ya7*. Conversely, it is a form of compliment to classify as *ya7* a person expected to be classified as *ix/naj*. Along the parameters of kinship, one can express extra affection by using classifiers for kins when referring to a favorite non-kin, and conversely, one can express anger by using classifiers for non-kin when referring to a rejected kin. There is no classification across the two subsystems of Jacaltec classifiers, meaning that people are never compared to animals or things. This strict limitation in verbal manipulation in Jacaltec can be put in contrast with Allan's mentions of 'abusive classification' of human beings by both animal classifiers or the general inanimate classifier in Japanese, and of the reclassification of women as round objects in Yucatecan, another Mayan language (Allan (1977: 296)).

addition, certain culturally salient objects form classes of their own, such as the corn class which is distinct from the plant class.

The classification of the concrete non-human objects of the world follows one of four strategies which can be shown to be cognitively and culturally motivated. The four strategies are as follows:

(1) Natural classification by material substance (animal, plant, rock, soil, water and fire classes). This is the unmarked principle of classification, being the most widespread, and presumably the original classificatory principle. It includes the identification of special classes for culturally salient objects (corn, dog, salt, twine, thread, cloth).

(2) Natural classification by perceptual analogy, which is limited to the rock and the corn classes and represents a metaphorical extension of the classes (glass and metal are classified as rock, and wheat as corn).

(3) Totemic classification in subsystem I, as member of the spiritual world. This is the principle accounting for the classification of objects such as the sun, the moon, lightning, crosses, mountains, the corn, the wind and diseases as gods or spirits.

(4) Absence of classification. The analysis of the unclassified objects underlines several types of constraints operating on the classification of concrete objects of the world: that they be perceived by several senses, that they not be made of unidentified substance or of an undifferentiated mixture of substances (no classification of air, smoke, garbage, plastic objects, beer, coca-cola).

As argued in Craig (1986b), the motivation behind the choice of classificatory strategy is cultural in nature and takes into account notions such as the amount of control that Jacaltecs exercise over objects, and the degree of familiarity they experienced with the objets, at the time the classification system was developing.[11]

[11] All the objects of the world fall along a continuum. At one extreme are the objects most familiar, those most used, controlled and manipulated, and which are classified on the basis of their substance, following strategy (1): they are the plants, the animals and the products derived from them. At the other extreme are the objects which the Jacaltecs could not manipulate, control, or even identify, and which remained unclassified. This strategy (4) accounts for the absence of classification of the intouchable air, smoke, and stars, the foreign products of unknown material origin, such as coca-cola, beer and plastic objects. In the middle is a range of objects with which the Jacaltecs were either not familiar when the classification system came about, such as metal and glass objects, and wheat and its products, or that they could not control or use for any purpose, such as ice. These middle range objects are then classified on the basis of perceptual characteristics of consistency and shape rather than substance, which is strategy (2). The totemic classification (4) represents the Jacaltec interpretation of the forces at work in the world, those over which they have no direct control but whose benevolent actions they hope for.

3.4. Noun origin of the classifiers

The semantic transparency of the Jacaltec noun classifier system is largely due to the identifiability of the classifiers as being derived from nouns. For the most part the classifiers are derived from nouns that are still in use in the language. As shown in table 2, only six (the four basic ones of (d) and two of the derived ones of (e)) are not associated with any free nominal form.

Table 2
Origin of the classifiers.

(a)	*Classifiers from*	*Noun*	
	Atz'am	Atz'am	'Salt'
	Ch'en	Ch'en	'Rock'
	Ha7	Ha7	'Water'
	Ix	Ix	'Woman'
	Ixim	Ixim	'Corn'
	K'ap	K'ap	'Cloth'
	K'a7	K'a7	'Fire'
	Te7	Te7	'Tree'
	Tx'al	Tx'al	'Thread'
	Tx'añ	Tx'añ	'Twine'
	Tx'otx'	Tx'otx'	'Soil/dirt'
	Unin	Unin	'Infant'
(b)	*Classifier from*	*Reduced noun*	
	Naj	Winaj	'Man'
	No7	Nok'	'Animal'
(c)	*Classifier from*	*Possessed noun*	
	Cumam	Cu-mam	'Our-father'
	Cumi7	Cu-mi7	'Our mother'
(d)	*Classifier with no corresponding noun*		
	Ho7	'Male kin'	
	Xo7	'Female kin'	
	Metx'	'Dog'	
	Ya7	'Respected person'	
(e)	*Classifier from*	*Classifier + Adjective*	
	Naj ni7an	Naj	Ni7an 'Young man (non-kin)'
	Ix ni7an	Ix	Ni7an 'Young woman (non-kin)'
	Ho7 ni7an	Ho7	Ni7an 'Young man (kin)'
	Xo7 ni7an	Xo7	Ni7an 'Young woman (kin)'

It has been argued (Craig (1986c)), on the basis of both internal and comparative evidence that the origin of the four classifiers which are not associated with free nominal forms in the language of today was most likely in vocative and honorific expressions, themselves often derived from kinship terms. The relatively more obscure origin of this particular set of classifiers is taken to mean that this part of the system of classification is the most archaic, hence that the Jacaltec system of noun classifiers must have originated with a reduced system of classifiers of social interaction.

3.5. Conclusion

The set of Jacaltec noun classifiers constitutes a lexico-semantic system not unlike that of classifiers found in other languages of the world in that it is based on semantic features commonly found in other classifier systems. A characteristic of the Jacaltec system, however, is its unusually high degree of semantic motivation which results in the identification of classes that appear particularly homogeneous when compared to those of classifying systems of other languages, such as the famous case of the Djirbal classes and the Japanese classifiers discussed in Lakoff (1986). With its lack of complex metaphorical extensions, the Jacaltec noun classifier system does not pose the kind of challenge for semantic analysis that other classifier systems around the world do.

The clear morphological and semantic nouniness of the classifiers presented in this section demonstrates the still partly lexical nature of this Jacaltec classifying system.

4. Jacaltec noun classifiers: grammaticalization

What has been demonstrated so far is the lexical origin of the noun classifiers. The remainder of this paper will now show how they have become integrated into the grammar of the language. The demonstration will be done in two stages, arguing first that they are morphologically of a grammatical rather than lexical nature, and second that they function syntactically as encodings of semantic and discourse functions.

4.1. Classifiers as grammatical morphemes

As was said earlier, what characterizes classifiers and sets them apart from other classifying systems is their morphosyntactic nature, the fact that they

play a role in languages that extends beyond their classificatory function. As morphosyntactic systems, classifiers may fall into a number of patterns which exhibit various degrees of grammaticalization.

The term grammaticalization is used here in a narrow sense to refer to the process by which lexical morphemes become grammatical morphemes.

The literature on grammaticalization includes studies of the lexical origin of some well-established grammatical morphemes and studies of the free morpheme origin of some inflectional categories. Examples of the former are found in the literature on the verbal or nominal origin of adpositions (Kahr (1975), Heine and Reh (1984), Svorou (1986)), examples of the latter in the literature on the pronominal origin of the verbal inflection of person (Givon (1975), Chafe (1977)).

In this particular instance, the lexical origin of the classifiers is transparent; it remains to show that they are part of the inventory of grammatical morphemes. The demonstration that noun classifiers constitute a grammatical class of their own will be done using familiar phonological, semantic, and structural arguments.

4.2. Jacaltec noun classifiers: from lexical to grammatical morphemes. Phonology

The grammatical nature of the classifiers is reflected in their phonemic forms, which are reduced forms of nouns. In some cases the reduction is segmental, as with the noun > classifier pairs *winaj* > *naj, nok'* > *no7*, but the common form of reduction is the loss of stress in all instances of noun classifiers functioning as noun adjuncts. Jacaltec has a stem initial stress rule which affects all lexical stems and only a few of the grammatical stems. Possessive and demonstrative determiners are unstressed in Jacaltec and so are the classifiers in noun adjunct function:

(5) xcám hin no7 wácax
died poss class cow
'my cow died'

(6) ẍwóche ch'en óme tu7
I like class earrings dem
'I like those earrings'

In repeater constructions (classifier + cognate noun) the distinction between stressed lexical head noun and unstressed grammatical classifier is obvious:

(7) no7 nók'
class animal
'the animal'
ch'en ch'én
class rock
'the rock'

In speech it is also common for the final consonant of the classifier to be deleted, reducing further the form of the classifier and resulting in a process of fusion between the prenominal classifier and the head noun similar to the effect of prefixation:

(8) te7 té7 > teté7
class tree
'the tree'
no7 nók' > nonó7
class animal
'the animal'
ha7 há7 > hahá7
class water
'the water'
tx'otx' tx'ótx' > tx'otx'ótx'
class soil
'the soil'
metx tx'í7 > metx'í7
class dog
'the dog'

In La Farge and Byers (1931) the classifiers are not recognized as such. Only seven classifiers are mentioned (male humans, female humans, animals, minerals, liquids, growing things and corn) and called either genders (1931: 260) or prefix and affix (1931: 315, 327). In a number of instances the classifiers are given as if they formed lexicalized compound nouns, without identifying the complex morphological form /noun classifier + noun/. This is the case with *ick'opo* 'girl', *naqtse* 'boy', *no-ic-kap* 'scorpion' or *icim-wa*' 'tortilla' (La Farge's transcription), which all start with a classifier: *ix* 'female non-kin', *naj* 'male non-kin' *no7* 'animal' and *ixim* 'corn'.

This treatment of the classifiers by La Farge and Byers is taken to

corroborate the present claim that the classifiers are phonologically reduced and affixed morphemes.

In their pronominal function, however, the classifiers maintain their lexical stress.

(9) cawáh heb' náj
2 pl class
'the two of them'
xí náj tet íx
said class to class
'he said to her'

The implications of the discrepancy between the presence of lexical stress on classifiers in pronominal function and the absence of stress on classifiers in determiner function will be dealt with in section 6.

4.3. From lexical to grammatical: semantics

As is typical of grammatical morphemes, the noun classifiers exhibit some semantic bleaching when compared to the lexical semantics of the corresponding nouns. In their classifier use, the nouns acquire a generic meaning. For instance, the noun *te7* 'tree' becomes the classifier for all plants and plant materials (part, products of plants, manufactured wooden products), in a language that happens to have no superordinate term for plants. Similarly, the noun *ch'en* 'rock' is generalized to classify, beyond the rock objects (grinding stone, grinding roller, cooking stones) all objects made of glass and metal. In this use, the *ch'en* classifier functions as a general classifier of hard consistency. Finally, the extension of the corn class to all grains, to include the wheat introduced by the Spanish colonizers, provides another example of semantic bleaching.

4.4. Syntactic categorization

In addition to the phonological and semantic arguments presented above to support the analysis that noun classifiers constitute a morphological category of their own, this section will consider how classifiers form a syntactic class of their own. The main line of argument is based on a comparison of noun classifier constructions with noun compounds which share nouns with similar classifying semantic functions but differ in syntactic behavior.

4.4.1. Noun compounds

There are instances in Jacaltec, as in other languages, of noun phrases containing more than one lexical noun. Generally it is easy to distinguish one as a head and the other as a modifier, as in constructions of the form '*X* good at/for *Y*' shown in table 3:

Table 3
Noun compounds.

Head		Modifier	
(a)	Alcal	txah	'Prayer mayor'
	Mayor	prayer	(Religious official)
(b)	S-k'ap	cañal	'Dancing clothes'
	E3-cloth	dance	(Genitive construction)
(c)	Potx'-om	txitam	'Pig killer'
	Kill-nom	pig	(Agentive nominalization)
(d)	A'-om	howal	'War maker'
	Give-nom	fight	(Agentive nominalization)
(e)	Potx'-b'al	txitam	'Instrument/place/time for killing pigs'
	Kill-nom	pig	(Non-agentive nominalization)

In the above examples, all the heads are syntactic nouns, either underived nouns as in (a), inflected noun – with genitive ergative prefix- as in (b), or derived noun – with nominalizing suffixation, either for an agentive nominalization as in (c) and (d) or for an instrumental/locative/time nominalization as in (e).

The word order pattern is Head + modifier, which follows the typologically expected 'head first' order of verb initial languages. Jacaltec is a rigid VSO language which conforms to typological word order features of verb initial languages in that it exhibits the following word order patterns (Craig (1977: 9–11)):

NOUN	Genitive
NOUN	Adjective
NOUN	Relative clause
RELATIONAL NOUN	Noun (of oblique phrases)[12]

[12] Mayan languages have few real invariable prepositions. Instead of prepositions they have relational nouns, which are inflected adpositions prefixed with the ergative marker (E) indicating the person (1,3) of the oblique NP:

As shown in the examples above, the semantic relation of the modifier to the head is as varied as the morphological nature of the head of the compound. There exists also a particular type of nominal compound which shows the same word order and which consists of the combination of a noun designating an object followed by another noun indicating the substance of that object, as in (10):[13]

(10) ñ̈ah ch'en
house rock
'cave'
ac te7
turtle log
'two toned log drum'
tz'a k'a
excrement fire
'charcoal'
cheh te7
horse wood
'wooden toy horse'

As expected of compound noun constructions, the semantic reading of the whole compound is a function of a combined reading of selected semantic components of each noun. In this construction, the first noun contributes the information of shape and the second that of substance. As is also not uncommon with compounds, the association of the two nouns may exhibit various degrees of lexicalization. Of the four examples given above, the first three are more lexicalized than the last.

---

y-iba ñ̈ te7 tx'at w-ib'a ñ̈
E3-on top class bed E1-on top
'on top of the bed' 'on top of me'

[13] Some compound nouns of varietal names appear to have a reversed order modifier + head, as in *pale nam* literally 'priest butterfly' designating a black kind of butterfly, referring to the traditional black robe of the priest. The different word order may be a reflection of the adjectival use of the first noun, to refer to the color of the animal. Although adjectives generally follow the noun, there exist a few which may precede it, including color terms (Craig(1977: 44–45)) which may then take on a different meaning, as in:

caj-la ha7 saj-la ha7
red-suff water white-suff water
'hot water' 'clean water'

The lexicalization is a function of the cultural saliency and the commonness and frequency of use of the objects in question. An indication of the degree of lexicalization of the construction is whether it appeared in natural texts or whether it had to be specifically elicited. For instance, there is a clear difference between the expressions for 'cave', 'drum' and 'coals' which were volunteered by native speakers and the expression *cheh te7* 'wooden horse' which had to be directly elicited. (This is the difference between 'strict' and 'loose' compounds discussed by, e.g. Allen (1980), Scalise (1984), based on a difference in the rules of semantic and phonological amalgamation which hold between the two elements of the compound. The strict compounds are stored in the lexicon, although analyzable as compounds, while the loose compounds are the product of the application of a compounding word formation rule.)

4.4.2. Classifiers and substance modifiers

The argument for considering classifiers as forming their own syntactic category is drawn from a comparison of the noun classifiers with the substance words of noun compounds. The comparison is compelling since the noun classifiers represent a subset of the substance nouns of compound constructions.

Classifiers and substance nouns appear in a pattern of complementary distribution given in table 4.

Table 4
Complementary distribution of classifiers and substance nouns.

Class.		Noun		v.s.	Noun	Substance	
(a)	No7	cheh	'Horse'		Cheh	te7	'Wooden horse'
	*Te7	cheh	'Wooden horse'		*Cheh	no7	'Horse'
(b)	Te7	ñah	'House'		Ñah	ch'en	'Cave'
	*Ch'en	ñah	'Cave'		*Ñah	te7	'House'
(c)	No7	sapato			*Sapato	no7	
	Animal	shoe			Shoe	animal	'Leather shoe'
	*Plastico	sapato			Sapato	plastico	
	Plastic	shoe			Shoe	plastic	'Plastic shoe'

The pattern in (a) is clear: classifier + noun when the object referred to is an animal (classifier *no7*), and noun + substance noun when the object referred to is an imitation of an animal, like a wooden toy (substance noun *te7*). The same pattern of distribution is found in (b) with the expressions for 'house' and 'cave' in which the noun 'house' *ñah* is used in one case with the classifier

for wood objects *te7*, and in the other with the substance noun for rock objects *ch'en*.

The argument for a distinct syntactic category of noun classifier is based on the following differences between classifiers and substance nouns of compound nouns:

(*1*) Word order: classifier and substance noun appear on opposite sides of the head noun: the substance noun follows it, the classifier precedes it. How this new word order might have emerged will be considered in section 4.4.3 below.

(*2*) Closed vs. open sets: the set of substance nouns is an open lexical set, while the classifier set is a closed set. There is a fixed set of substances that have become classifiers. That set does not include plastic for instance, as shown in table 3(c) above. In actual use, the contrast is between *no7 sapato* 'leather shoe' and *sapato* 'plastic shoe', as plastic shoes have come to dominate the market and have become the unmarked kind of shoe.

The motivation for the selection of which substances have become classifiers is discussed at length in Craig (1986b). There it is argued that it is a matter of the cultural relevance and saliency of the object at the time the system of classification was still developing, always bearing in mind than one cannot do much more than motivate *a posteriori* the selection of the classifiers, in view of the variation that exists even between the closely related Kanjobalan languages. For a period of time the classification system was productive enough to incorporate the objects introduced by the Spanish conquerors that were made of substances previously unknown or unfamiliar to the Jacaltecs. Such were the cases of metal and glass objects which were absorbed in the rock class. But the new substances more recently introduced in the Jacaltec culture (plastic, beer, coca-cola) are not being absorbed in the classificatory scheme, neither by expansion of an already existing class nor by the creation of a new classifier. While the term for the plastic substance has been borrowed from Spanish, it may only function as a substance noun in compounds in Jacaltec.[14]

There is therefore a defined set of substance nouns that may function as classifiers in a prenominal pǫsition as opposed to an open set of nouns, including all the substance nouns that may function as noun modifiers in a noun compound construction.

(*3*) Semantic relevance: the term semantic relevance (taken from Bybee

[14] While plastic never became a classifier in Jacaltec, it actually did in Chuj, a close Kanjobalan language. Chuj also has an additional class of medicinal plants *a'n* not found in Jacaltec, showing how language specific the final sets of classifiers are.

(1985)) refers to the degree to which, in a complex word, the reading of the head element is affected by the semantic content of its morphological modifier.

If the notion of complex word is extended to the constructions classifier + noun and noun + substance noun, the degree of semantic relevance between the elements of each construction can be compared. From that comparison emerges a clear contrast between the high degree of semantic relevance that exists within the compound nouns and the semantic redundancy that characterizes the relation between the classifiers and the nouns they accompany.

In compound nouns the semantic reading of the whole is determined to a large degree by the semantic content of the substance noun. It takes the combined reading of shape from the first noun and material from the second to identify the object being referred to. For instance, the Jacaltec compound noun for 'cave' combines the word 'house' for shape and the word 'rock' for substance.

What the compound noun construction encodes, therefore, is a marked association of shape and substance in which the substance is not that of the best exemplar of the object type. For instance, a prototypical Jacaltec house is not made of rock but rather of cane and thatch.

Meanwhile, the prototypical substance of the object is specifically what the classifier overtly marks, and why its semantic reading is redundant with the reading of the object noun. This absolute semantic redundancy of the noun classifiers is in fact a particular feature of the Jacaltec system and results in part from the absence, in the Jacaltec system, of two common features of numeral classifier systems. One is the lack of multiple classifications of particular objects (such as the various classifications of rivers in Burmese) and the other is the absence of metaphorical extensions of the classes, the process which makes for very heterogeneous classes in many numeral classifiers of the world (such as the *hon* class of Japanese).[15]

Although it has just been established that the semantics of the Jacaltec noun classifiers are redundant with respect to the semantics of the nouns they

[15] Becker (1975) cites the various possible expressions for river as river one line (on a map), river one arc (path to the sea), river one connection (tying two villages), and river one thing (in discussion of rivers in general). Furthermore, see Lakoff's discussion of how the *hon* class has come to include, besides long, thin, and rigid objects such as sticks, pencils, trees, etc., less representative cases such as rolls of tape, telephone calls and TV programs, shots in basketball, etc. (1986: 25–30).

classify, there exist a few cases where a particular noun appears with different classifiers, such as in the three pairs below:

(11a)	te7 ak'b'al	(11b)	no7 ak'b'al
	plant flower		animal flower
	'the flower'		'the candle'
	te7 xila		no7 xila
	plant chair		animal chair
	'the chair'		'the (leather) saddle'
	ixim ixim		cumam ixim
	corn corn		god corn
	'the corn'		'the corn god'

or appears either with or without a classifier as in the following two pairs:

(12a)	witz	(12b)	naj witz
	ø mountain		man mountain
	'the mountain'		'the spirit of the mountain'
	cak'e		naj cak'e
	ø wind		man wind
	'the wind'		'the spirit of the wind'

In the last two instances the lack of classifier for the concrete objects is accounted for by the principles of classification set out earlier (see section 3.3), which exclude the classification of locative nouns (mountain) and that of objects of the world not perceived by at least two senses (wind).

It may look at first as if the pairs above constitute counterexamples to the claim that noun classifiers are semantically redundant, since in these examples they seem to determine the reading of the nouns they accompany. However, it is more likely to be a case of lexical split of the nouns – whereby two meanings must be assigned to each noun (as in *ak'b'al* '(11a) flower, (11b) candle' or *ẍila* '(11a) chair, (11b) saddle') – than a case of semantic use of the classifiers. Two arguments can be advanced to support this analysis: one is the semantic difference that holds between the two readings of the noun, and the other is the lack of productivity of the phenomenon, the sets of examples given above being the only instances known. Therefore, rather than counterexamples to the claim that classifiers are semantically redundant, these pairs may provide more evidence to validate it.

(*4*) Coocurrence of classifier and substance noun. In cases where the compound noun has been lexicalized, as with the expression for 'cave', the compound noun itself can be classified, resulting in a double classification of the object, one by a substance noun and the other by a classifier:

(13) ch'en ñah ch'en
rock house rock
class cave
'the cave'

4.4.3. From substance noun to classifier

An account of the origin and path of development of the classifier construction requires that we answer two questions: first, that of the origin of the classifier words themselves and second, that of the possible source for the syntactic classifier + noun construction. The first question has already been answered: the lexical origin of the classifiers is undoubtedly the substance nouns of the compound constructions.[16]

The second question really consists in asking what motivated the prenominal placement of the classifier. An answer can be found in the internal structure of the compound constructions themselves, when one considers that in the structure 'head + modifier' the head refers to a category of objects while the modifier indicates a specific type. The relation is one of generic to specific, of higher to lower taxon.

This is exactly the type of relation that holds between the classifier and the noun that follows it, where (14a) either the classifier corresponds to a higher taxon and the noun to a lower, in a taxonomic relation, or (14b) the classifier corresponds to a category and the noun to a specific type or a part:

(14a) no7 cheh te7 oñ
class noun class noun
animal horse plant avocado
(14b) no7 chib'e te7 ñah
class noun class noun
animal meat plant/wood house

[16] This situation is reminiscent of the situation of Tai numeral classifiers discussed by DeLancey (1986). Tai has both class terms and classifiers which parallel in some way the substance noun and classifiers of Jacaltec. The class terms and the classifiers are semantically quite similar and have the same lexical origin, however they constitute distinct syntactic categories.

The classifier + noun construction therefore seems to fit the same semantic mold as that of the compound nouns with substance noun, with the classifier referring to a class of objects and the noun narrowing the class to a specific object. At the morphosyntactic level the two constructions seem to exhibit different patterns, with the compound construction fitting in a head + modifier pattern typical of verb initial languages but the classifier construction representing a modifier + head pattern. The difference in patterns is evident in the case of the classified lexicalized compound for cave:

(15)	ch'en	ñah-ch'en
	class	Noun-substance noun
		HEAD-Modifier
	Modifier	HEAD

A motivation for the modifier–head word order of the classifier construction can be found in the evolutionary scenario of the classifier system presented in Craig (1986c). Evidence is presented there that the system started with the development of classifiers of social interaction, and, crucially, that those classifiers of social interaction originated in vocative, honorific and epithet constructions of the pattern modifier + head. When classifiers of physical and functional interaction developed later, they followed the already established classifier + noun pattern.

4.5. Conclusion

Phonological, semantic and structural arguments have been presented to support the analysis that Jacaltec noun classifiers are grammatical rather than lexical morphemes. When compared to their corresponding nouns, the noun classifiers exhibit features which have been recognized as characteristics of grammaticalization, such as a shorter unstressed phonological form, semantic bleaching, selection of a closed set and assignment to a specific prenominal slot.

5. The syntacticization of noun classifiers

5.1. On syntacticization

While the previous section has established the morphological grammaticalization of the classifiers, this section will consider their syntacticization.

By syntacticization is meant the systematic use of the classifiers to create particular syntactic structures in which the classifiers encode information other than their original classificatory function. In the Jacaltec case, the classifiers are grammatical morphemes which function as determiners and pronouns which encode such notions as referentiality, coreferentiality and thematic salience, within well defined syntactic configurations.

On a continuum from lexical to grammatical systems, this advanced degree of syntacticization once again places the Jacaltec classifiers at a mid point between the obligatory inflectional nature of the gender and noun class markers and the pragmatically determined discourse use of numeral classifiers in languages such as Burmese (Becker (1986)), Chinese (Erbaugh (1986)), Japanese (Downing (1986)), Tai (DeLancey (1986)) or Malay (Hopper (1986)).

The syntactic use of the noun classifiers results in their very high frequency in texts, as illustrated in the following paragraph from a narrative where noun classifiers functioning as determiners have been marked * and those functioning as anaphoric pronouns have been marked **:

(15a) yic'ti7al *no7 conejo b'oj *no7 oj
story class rabbit and class coyote
The story of the rabbit and the coyote.

(15b) ahatoj *no7 ni7an conejo swi7 *te7 chulul.
is up class small rabbit on top class injerto tree
The little rabbit was perched on top of the injerto tree.

(15c) x7apni *no7 oj.
arrived class coyote
The coyote arrived.

(15d) tzet chawu b'eti7 cho7?
what you do here brother
"What are you doing here, brother?"

(15e) ẍi ab' *no7 oj tet *no7 conejo.
they say class coyote to class rabbit
they say that the coyote said to the rabbit.

(15f) matzet om
nothing man
"Nothing, man!"

(15g) to ay *te7 tahnaj chulul beti7 la.
that exists class ripe injerto here see
It's just this ripe injerto here, see?

(15h) ẍi ab' *no7 ni7an conejo
they say class small rabbit
They say that the small rabbit said
(15i) laẅan sloni **no7 hune7 *te7 tahnaj ulul.
while eating class a class ripe injerto fruit
while he was eating a ripe injerto fruit.
(15j) aytij hunuj wet an om.
throw down one to me man
"Throw me one down, man!"
(15k) ẍi ab' *no7 oj tet **no7
they say class coyote to class
they say that the coyote said to him.'

This short narrative section contains 13 noun classifiers, 11 of which are used in a determiner role accompanying a noun (*) and 2 of which are used in an anaphoric function (**). In (15i) the classifier for the rabbit, *no7* functions as a subject pronoun and in (15k) it functions as a pronoun in an oblique function.

A two-step argument for the syntacticization of the classifier will be developed in the next two sections, the first considering the noun adjunct function of the classifier and the second its pronominal function.

5.2. Noun classifiers as markers of semantic referentiality

As noun adjuncts, noun classifiers in Jacaltec belong to the referential marking system of the noun phrase. Non-referential nouns in an attributive function may not be accompanied by a classifier, as illustrated in the examples below.

Compare the absence of classifier with the non-referential noun of the nominal predicate in (16a) to the presence of classifier with the referential subject noun in (16b):

(16a) kap mat s-b'ih naj
Gabriel Mateo poss-name class
'Gabriel Mateo was his name.'
(16b) caw caẅ ye naj kap mat
very smart is class Gabriel Mateo
'Gabriel Mateo is very smart.'

Consider also the contrast between the lack of classifier with the non-referential noun used as a manner adverbial in (17a) and (17b) – indicated by xxx – and the presence of classifier with the referential noun in (c):

(17a) tziṅemet ye ho7 xxx xaj telajmi macawal
who knows is class xxx leaf tree-maybe or
male-kin
niẍtej xxx nok'
small xxx animal
'Who knows what he has turned into, maybe into the leaf of a tree, maybe into a small animal.'

(17b) haca7ẍaṅetic'a how xxx tx'i7 smak' heb' naj
like-only-always rabid xxx dog hit pl class
'Like rabid dogs, the men were hitting.'

(17c) xin xiw yiṅ metx' tx'i7 tu7 la
I am afraid of class dog dem see
'I am afraid of that dog, see!'

The objects of the incorporative antipassive construction may also be non-referential nouns, in which case they do not take a classifier:

(18a) chin to il-o7 xxx txitam
I go see-AP pig
'I go to feed the pigs.'

(18b) poh-o7 xxx si7 xwu
cut-AP xxx wood I did
'Cutting wood I was.'

(18c) haca7 tejo7 xxx ib', haxatu7
like hit with xxx armadillo like that
sticks-AP
xute heb' naj
did pl class
'Like killing an armadillo with sticks, that's how they did it.'

Finally, when the objects of non-implicative verbs are non-referential they are marked with the irrealis suffix *-oj* (which is subject to vowel harmony) and do not carry classifiers:

(19) x7oc' heb' ix say-a7 { tx'otx' / class / hun-uj / a-irrealis } munlab'al
started pl class look for pot

'They (women) started looking for { the / a (non specific) } pot.'

Since non referential nouns never take classifiers, the classifiers seem to be part of the determiner system of referential nouns. Jacaltec has a rich morphosyntactic determiner system which includes numeral, possessive, demonstrative and indefinite morphemes. The question remains to determine the role of the classifiers, which may appear alone with the noun or combine with other determiners in the pattern: *numeral* < *possessive* < *noun classifier* < *NOUN* > *demonstrative* illustrated with the following examples:

(20a) no7 txitam tu7
class pig dem
'that pig'

(20b) hin no7 txitam
poss class pig
'my pig'

(20c) hune7 hin no7 txitam tu7
num poss class pig dem
'that one pig of mine'

Unlike what is generally the case with numeral classifiers in other languages, the Jacaltec noun classifiers may be used independently of the other determiners in that their presence is not linked to the presence of a numeral or a demonstrative.

5.3. Noun classifiers as markers of definiteness?

At first glance, the noun classifiers in their determiner role appear to function like markers of definiteness. There is no other morpheme candidate for the marking of definiteness and the reading of the combination Noun Classifier + Noun is that of a definite NP. Noun classifiers are found in second mentions of noun phrases originally introduced with the indefinite marker

hune7 (which is homophonous with the numeral 'one', as is common in many languages).

The progression from non-referential or referential indefinite (no classifier) to individuated, identifiable entity (with classifier) will be illustrated with three examples.

The first is a sequence out of a cooking recipe for snails (classifier *no7* 'animal') in which water is first introduced as a non-referential mass noun (no classifier) but appears later as an identifiable count noun (with the classifier *ha7*):

(21a) tato sxolḧe *ha7* ẍtxiclax no7
if in only water is cooked it
(21b) cat yaytoj ixpix b'oj seboya sxol no7
then goes down tomato and onion with it
(21c) yet xa huji *ha7* ha7 xin
when already boil class water then
(21d) cat sto no7 sxol *ha7* *ha7*
then goes it in class water
'(21a) If they (the snails) are cooked in water, (21b) then tomatoes and onions are thrown in with them. (21c) It's when the water is boiling, (21d) that they go in the water.' (Craig (1977: 392–395))

The next example of how classifiers mark objects as definite and specific shows the contrast between an initial generic non-referential mention of pigs in a sentence in a descriptive mode:

(22) xto pax ix k'opo a7o7 yet *txitam*
went again the girl give food of pig
'The girl went back to feed the pigs.'

and the next mention of pigs, now referential and definite, in a dialogue between the girl and her beau that takes place at the pig corral:

(23) chin tit pax a7o7 yet *no7 txitam* an
I come back give food of class pigs
'I will come back to feed the pigs.'

The last example brings together two successive mentions of a cave, first with the indefinite *hune7* as a new participant in the discourse, then in the following mention with the classifier *ch'en*:

(24) (...) scawilal tu7 xil naj *hune7 ẅach'en* tz'ulik (...)
near there saw he indef. cave small
'(...) near there he saw a cave that was small (...)' (and hid in it)

(25) (...) maẅtic'a ch'illax naj yu tz'ulik *ch'en ẅach'en* (...)
never was seen he for small class cave
'(...) he was never seen because the cave was small (...)'

In all the above examples, the classifiers appear to function as markers of definiteness. The presence of the classifier seems to encode in particular certain features that are considered part of the definition of definiteness, such as the individuation and the identifiability of concrete objects.

5.4. Noun classifiers as discourse markers of importance

Noun classifiers cannot be said to simply mark definiteness, however, since they may cooccur at times with the indefinite marker *hune7*, in a marked indefinite NP construction of the form: *hune7* + *classifier* + *noun* which contrasts with the unmarked indefinite construction *hune7* + *noun*. The presence of classifiers in some indefinite NPs raises the question of what notion is shared by the definite and the marked indefinite constructions.

One way to approach the question is to try to isolate what motivates the presence of classifiers in certain indefinite constructions. The more basic issue is to determine what motivates the existence of two referential indefinite constructions in a language. Studies of this phenomenon have been carried out in other languages, such as Hebrew, Creoles, Mandarin Chinese, and Sherpa (Givon (1981, 1985)). They have shown that the marked indefinite construction, the one with extra morphosyntactic encoding, encodes a thematically more important new participant. A measure of this thematic importance can be taken by calculating the rate of persistence of the participant in the following discourse: the marked indefinites are the indefinites most likely to recur in the following discourse.

Ramsay (1986) demonstrates just that: that the use of the marked indefinite NP with classifier correlates with the high thematic saliency of the NP. Her analysis is based on a text count of the degree of persistence of both types of indefinite constructions, where the degree of persistence is arrived at by counting the number of clauses in which the participant is mentioned within the ten clauses immediately following its first appearance as an indefinite NP. A comparison of the average persistence of the tokens of both types of indefinite NPs is given in table 5 (TP = topic persistence).

Table 5
Overall averages of topical persistence for all tokens of each category (Ramsay (1986: 30)).

Hune7 + Classifier + Noun				Hune7 + Noun			
Subject		Nonsubject		Subject		Nonsubject	
NP	TP	NP	TP	NP	TP	NP	TP
22	6.10	11	4.27	6	1.33	11	0.72

The counts reveal a clear tendency for the indefinite NP marked with a classifier to be a new participant that will play an active role in the narrative, as indicated by its frequent recurrence (labelled topic persistence or TP).

The breaking point at which the two types of indefinite NPs distinguish themselves is at the topical persistence value of 2 clauses. When the calculations are redone with the simpler measures of low and high persistence, the picture is even clearer, as seen in table 6.

Table 6
Percent distribution of low persistence and high persistence categories of the two types of indefinite NPs (Ramsay (1986: 33)).

	Hune7 + Classifier + Noun				Hune7 + Noun			
	Subject		Nonsubject		Subject		Nonsubject	
TP	NP	%	NP	%	NP	%	NP	%
0-2	—	—	3	27.3	6	100	11	100
2+	22	100	8	72.7	—	—	—	—

All tokens of the unmarked indefinite construction with no classifier fall within the low persistence category of less than 2 clauses while 100% of the marked indefinite subjects fall in the high persistence category. There is only a 10% exception to the high persistence of marked indefinite NPs (3 out of 33 tokens). They happen to be all nonsubjects and correspond to important props rather than important active participants.

The above text counts demonstrate therefore that the use of classifiers in the indefinite construction is a morphosyntactic encoding of the pragmatic notion of thematic saliency, and functions as a signal sent by the narrator to the hearer that the newly introduced indefinite participant is to be paid particular attention to.

5.6. *Conclusion on noun classifiers as determiners*

This section has shown the place of classifiers in the determiner system of Jacaltec: in their noun adjunct function the classifiers mark referential NPs which are thematically important.

This thematic importance is the feature shared by the marked indefinite and the definite NPs.[17] What is crucial to the point of this paper is to have established how the classifiers have become integrated into an elaborate system of morphosyntactic encoding of semantic and pragmatic notions beyond their original classificatory function. This use of classifiers as determiners of the noun phrase is also found in some of the numeral classifier systems of the world, such as the ones of northern Thai, while in some other numeral classifier systems such as Chinese the classifiers obligatorily accompany quantifiers and demonstratives (Greenberg (1972)).

6. Noun classifiers as pronouns

6.1. *An innovation in the Mayan family*

Besides their characteristic frequent use as determiners, Jacaltec noun classifiers are noteworthy in their common use as pronouns for the nouns that are classifiable. This represents an innovation in the syntax of the Mayan family of languages which generally lacks sets of third person pronouns.

The Jacaltec classifiers can be pronouns under identity of reference and replace a whole noun phrase as in (26a), as well as pronouns under identity of sense, in which case they are accompanied by the demonstrative, as in (26b):

(26a) xinlok' hune7 no7 txitam bak'ich tu7 yiñ k'iñ
I bought ind class pig fat dem for fiesta
yaj xcam no7 ewi
but died PRO yesterday
'I had bought that fat pig for the fiesta but it died yesterday.'

[17] Shroyer (1985) describes a similar situation in spoken English with the contrastive use of *a* for an unmarked indefinite construction and *this* – a morphologically definite determiner – for the equivalent of a marked indefinite construction.

(26b) caw ẍwoche k'ap camiẍe ti7 yaj k'a7
very I like class shirt dem but more
chawoche k'ap tu7
you like class dem
'I like this shirt very much but you like that one best.'

For those nouns that are not classifiable no pronoun form is available, although inflectional morphology on both verbs and relational nouns makes noun phrases in all syntactic functions recoverable:

(27) ilc'anab' xxx tx'umel tu7 la7 chawila xxx
look at xxx star dem see! you see xxx
'Look at that star! do you see it?'
where *chawila*: /ch-ø -aw -il -a/
asp-Obj-Subj-Verb-Transitive

In their pronominal function, the Jacaltec noun classifiers are pronominalized nouns rather than strictly pronouns, as evidenced by their semantic load and their stress pattern. Their semantic load is not only that of third person but also of the equivalent of an elaborate set of genders, which includes semantic features such as sex, age, kinship, respect, divinity, material and consistency. In addition, and as noted in section 4.2 above, noun classifiers in pronominal function keep their lexical stress while those in determiner function loose it.

These noun-like characteristics of the classifiers in pronominal function further support the analysis that the noun classifier systems represent a relatively recent innovation of the Kanjobalan branch of the Mayan family, an innovation that Kaufman (1984) dates after 500 AD. This innovation happens to be characteristic of only some of the Kanjobalan languages, specifically those of the Cuchumatanes mountains: Jacaltec, Acateco, Chuj and Kanjobal, and not those of the lowland Chiapas region. See Craig (1986c) for a discussion of the variation found across the noun classifier systems of the Kanjobalan languages.

On the basis of internal and comparative evidence Craig (1986c) argues that the system started with a set of noun classifiers of social interaction which originated in existing systems of vocatives, honorifics – themselves in part derived from kinship terms – and epithets. Such a source for third person pronouns is readily found in other languages of the world, particularly in some systems of pronominal polite forms, such as the type of pronominalized nouns described in Head (1978). Compare for instance the pronominal use of the

classifier *cumam* literally 'our father', used for deities, to the Spanish polite form of address *Usted*, from *vuestra merced* 'your mercy', or the use of possessed pronominalized nouns like *majesty* or *honor* in English for both honorific forms of address and forms of reference.

To support the argument that the classifier system of social interaction was developed first is the fact that the only other Mayan languages which show signs of a noun classifier system have a system limited to classifiers of social interaction. They are found in the neighboring Mamean branch, specifically in the Mam language described by England (1983) (see pp. 158–160 for a list of the twelve classifiers found in Mam). The Mamean system is limited in various ways, in not having developed a system of classifiers of physical interaction, and more importantly here, in not having undergone the same process of syntacticization as the Jacaltec noun classifiers. The Mamean classifiers are only used as pronominalized nouns, never as determiners, and their use is pragmatically determined, much like the use of classifiers in pronominal function in languages like Japanese (Downing (1986)).

6.2. *Extensive use of anaphoric noun classifiers*

Not only do the Jacaltec noun classifiers obligatorily accompany the third person verbal inflections for subject (S) and object (O), they are also an obligatory component of possessive and relational constructions:

(28) *subject/object marking*:
x-ø-w-il naj
asp-O.3-S.1-see class (O.3)
'I saw him.'
xc-ach-s-mak' naj
asp-O.2-S.3-hit class (S.3)
'He hit you.'
x-ø-s-colwa ix naj
asp-S.3-O.3-help class (S.3) class (O.3)
'She helped him.'

(29) *Possessive constructions*:

s-mam naj	y-atut ix	y-oj cumi7
3p-father class	3p-house class	3p-foot class
'his father'	'her house'	lit: her (divinity: moon) foot
		'moon light'

(30) *Relational constructions (adpositional phrases)*:

y-ul ch'en	y-ibañ no7	y-alañ te7
3p-in class	3p-on class	3p-under class
'in it'	'on it'	'under it'
(rock: cave)	(animal)	(plant: wooden object)

This obligatory syntactic use of classifiers for third person personal pronouns for subject, object, possessor and oblique NP's, coupled with the use of classifiers as determiners considered in the previous section is what makes the classifiers omnipresent in the structure of the Jacaltec clause. The obligatory use of classifiers in pronominal function is a clear example of syntacticization, the process by which a systematic encoding is established independently of discourse pragmatic notions.

6.3. Noun classifiers as markers of coreferentiality

One of the major arguments for saying that the noun classifier system of Jacaltec has undergone a process of syntacticization is found in the particular syntactic behavior of the pronominal noun classifiers considered in section 6.1 and 6.2. The syntactic behavior alluded to here is described in Craig (1977: 158–190) under the name of Noun Classifier Deletion rule. It consists in the deletion of pronominal noun classifiers under conditions of coreferentiality within certain syntactic boundaries. In a single clause for instance, only the first of several coreferential classifiers may appear in the surface. This constraint is illustrated in the pair of examples below:

(31a) xil naj pel s-mam naj
saw class Peter poss-father class
'Peter$_i$ saw his$_j$ father.' (cannot mean his$_i$ father)

(31b) xil naj pel s-mam xxx
saw class Peter poss-father xxx
'Peter$_i$ saw his$_i$ father.' (cannot mean his$_j$ father)

The only possible reading of the anaphoric classifier in (31a) is that it is not coreferential with the NP to its left, while the anaphoric classifier is obligatorily missing in (31b) if a relation of coreferentiality links the two NPs.

The coreferential noun classifier deletion operates on a left to right axis, with no regard to the syntactic functions of the coreferential pronominal classifiers. Only the leftmost NP of a series of coreferential NPs appears on the

surface structure, with all the subsequent coreferential ones to be inferred (Craig (1977: 161–162)). In example (32a) the missing oblique NP is to be interpreted as coreferential with the possessor of the subject to its left and in example (32b) the missing subject NP is to be interpreted as coreferential with the focused oblique NP to its left:

(32a) xcan y-uẍ̱taj naj sc'atan xxx
stayed poss-brother class with xxx
'His brother$_i$ stayed with (him$_i$).'
(32b) sat s-tx'at naj xwayi xxx
on poss-bed class slept xxx
'It is on his$_i$ bed that (he$_i$) slept.'

It is worth noticing that the Jacaltec phenomenon of noun classifier deletion described here, a case of anaphor-binding with an unusual strict reliance on surface linear ordering, is contributing to the development of new proposals within the syntactic theoretical school known as Government-Binding. See Hoekstra (1986) for instance. An account of the Jacaltec facts within that theory requires a reconsideration of the notion of configurationality, with Jacaltec representing an interesting type of non-configurational language. One of the interesting features of Jacaltec syntax is, that besides its lack of structural isomorphy between the Logical Structure (LS) and the Phrase Structure (PS) levels which is the defining characteristic of non-configurational languages, it exhibits a rigid VSO word order.

The exact nature of a theoretical proposal able to account for the Jacaltec facts within a Government-Binding framework is beyond the scope of this paper, the important point being that in order to describe the phenomenon of coreferential noun classifier deletion outlined in this section, one needs to appeal to linguistic concepts which clearly belong to the domain of syntax. Such is the case for the obligatory morphosyntactic encoding of coreferentiality, and the structural notions of linear ordering and clause boundedness. Hence, no matter what specific syntactic analysis might be proposed, it is clear that the noun classifiers have undergone a process of syntacticization.[18]

[18] Hoekstra (1986) uses Jacaltec data to argue for the universality of the syntactic level of Logical Structures, at which hierarchical structures are postulated, and the language specificity of the level of Phrase Structure, at which specific conditions on adjacency and directionality are specified. The data presented in this section shows that Jacaltec employs directionality besides C-command for anaphor binding.

The process is not strictly clause-bounded, in fact, although it applies across clause boundaries in such a fashion that the argument being made about the syntacticization of the classifiers is anything but strengthened by it. The fact is that the process of noun classifier deletion discriminates between two types of clause boundaries.

For instance, the boundary of a finite complement sentence introduced by a complementizer blocks the noun classifier deletion. As shown by the ungrammaticality of *(33a) below, the anaphoric classifier subject remains, in spite of the coreferentiality of the subject of the complement clause with the subject of the main clause, giving rise to the referential ambiguity of the embedded subject in (33b):

(33a) *chal naj // chubil chuluj ————
says NCl/he that will come NCL Del
'he$_i$ says // that he$_i$ will come'

(33b) chal naj // chubil chuluj naj
says NCl/he that will come NCl/he
'he$_i$ says // that he$_{ij}$ will come'

Meanwhile, Noun Classifier Deletion applies across the boundaries of infinitival complement clauses, deleting any classifier within the complement sentence that would be coreferential with a classifier of the main clause. In the example below, the possessor of the object of the complement sentence is deleted under coreferentiality with the subject of the main clause:

(34a) xil ix hawatx'en scamix̱ ————
saw cl/she you make poss-blouse NCL Del
'She$_i$ saw you make her$_i$ blouse.'

(34b) *xil ix hawatx'en scamix̱ ix
saw cl/she you make poss-blouse cl
'She$_i$ saw you make her$_i$ blouse.'

Finite coordinated clauses line up with complement sentences introduced by complementizers, while relative clauses – which in Jacaltec are not introduced by a relative marker – line up with infinitival complement clauses, thereby creating a distinction between two kinds of clause boundaries with respect to the application of the rule of Noun Classifier Deletion.

As was the case within a clause, Noun Classifier Deletion across clause boundaries applies strictly on the basis of linear order. This can be best shown

with examples of relative clauses, which can either follow or precede the major arguments of the main clause. Ignoring the missing classifier of the relativized NP which is the major encoding of the relative clause structure, the following pair of examples illustrates how (a) a classifier inside the relative clause is deleted under coreference with a classifier of the main clause, and (b) a classifier actually of the main clause is deleted under coreferentiality with a classifier of the relative clause.

(35a) xchiwa sc'ul ya7 yiñ ni7an unin
was angry her heart class at small child
/ xpohnitoj ——— sxih ——— /
broke Rel Del her pot NCL Del
'The lady$_i$ was angry at the child who broke (her$_i$) pot.'

(35b) / ixim ixim c'ochbil ——— yu ix
class corn shelled Rel Del by class/her
xitoj ——— yiñ molino
took NCL Del to mill
'It is the corn that she$_i$ had shelled / that (she$_i$) took to the mill.'

The types of boundaries established on the basis of the noun classifier deletion data find support in data from two other phenomena in Jacaltec: the placement of a first person clause final particle (Craig(1977: 276–286)) and tolerance for ambiguity of noun classifiers (Craig(1977: 173–186)). Here again, the nature of the theoretical proposal that would account for the hierarchy of syntactic clause binding established on the basis of the data from those three phenomena is beyond the scope of this paper, and the main point to be made is that the behavior of noun classifiers is a matter which is at the core of any discussion of the syntax of the language.[19]

6.4. Conclusion: the syntacticization of noun classifiers

As was shown in the preceding sections the noun classifiers are used in Jacaltec as noun phrase determiners and as basic anaphoric pronouns. As

[19] The behavior of bound anaphoric classifiers across the various types of clause boundaries has been subject to both generative and functional treatments. While Hoekstra (1986: 74–83) analyzes the difference as a formal matter of presence or absence of COMP node, functionalists such as Foley and Van Valin (1985) have used Jacaltec data such as the one presented in this section and summarized in Craig (1977: 173) to propose a universal Clause Binding Hierarchy congruent with other proposals such as those of Givon (1980) and Noonan (1985).

determiners, they are markers of the semantic notion of referentiality and the discourse pragmatic notion of thematic saliency, with its corollary feature of individuation and topicality. Meanwhile, as pronouns they are a grammatical index for the tracing of referentiality and coreferentiality in discourse.

In their role as determiners and anaphoric pronouns, the Jacaltec classifiers resemble other classifier systems of the world. As mentioned earlier, numeral classifiers in other languages may fulfill a function of determiner also, as in Malay (Hopper (1986)) or Thai (Greenberg (1978)), although the exact conditions of their use requires a language specific analysis. Similarly, numeral classifiers may be used as anaphoric pronouns, as in Thai, Burmese, and Vietnamese (Cooke (1968)). What is noteworthy about Jacaltec is the extent to which its noun classifiers have become incorporated into the syntax of the language, beyond the simple kind of concordial phenomenon of their anaphoric use. The role played by noun classifiers in the encoding of the feature of coreferentiality is taken to be one of the strongest arguments for the claim that in Jacaltec the classifier system has become syntacticized to a degree uncommon for classifier systems.

The Jacaltec noun classifiers are clearly of lexical origin and are more involved in the syntax of the language through their dual role of determiners and anaphoric pronouns than is characteristic of the more common numeral classifiers. However, they are still free morphemes, are not generalized to all nouns of the language and have not acquired the inflectional characteristics of noun class systems.

The behavior of the pronominal noun classifiers is reminiscent of two familiar linguistic phenomena which characterize the syntax of certain languages. One is that of zero anaphora, with the Jacaltec equivalent of the absence of certain coreferential classifiers; the other is that of switch reference, with the Jacaltec equivalent of the presence of classifiers being what marks the switch of reference.

When compared to the instances of zero anaphora recently investigated (see Li and Thompson (1979) for Chinese, Givon (1983) for spoken and written English, Downing (1986) for Japanese), the Jacaltec phenomenon of noun classifier deletion appears to be one of the more syntactically defined systems, with its obligatoriness within a clause and its sensitivity to types of clause boundaries rather than its dependence on notions of topicality (for English) or speaker sensitivity to sociolinguistic features (for Japanese and Chinese). When compared to systems of switch reference such as the ones described in Haiman and Munro (1983), the Jacaltec noun classifier deletion appears to be a less

syntacticized system, with the main difference being the strictly linear character of the way the Jacaltec system operates.

What might explain the special status of the Jacaltec system of noun classifiers is the fact of its being such a recent innovation. Their recent origin is obviously what accounts for the semantic transparency of the classifiers and their still obvious nominal origin and the absence of the kind of morphologization that is the trait of old systems like that of Bantu. Meanwhile the involvement of the classifiers in the syntax clearly sets apart the grammar of the Kanjobalan languages from that of the other languages of the Mayan family.

7. Conclusion

The goal of this paper was to describe a particular type of classifier system for what it shows of the progressive evolution of some lexical systems into grammatical ones. At the intersection of studies of grammaticalization and classifier systems one finds literature speculating on the evolution of classifier systems at both ends of a lexical–grammatical continuum. On one hand, toward the lexical end, are the numeral classifier systems of lexical origin and limited interaction with syntax. On the other hand, at the inflectional morphology end of the continuum, are the noun class and gender systems, the origin of which is in some cases postulated to be free classifying morphemes interacting with the syntax of the language. See, for instance, Greenberg's work (1978) on the Bantu noun class markers in which he attributes the origin of the inflected noun classes to classifying demonstratives which have developed agreement characteristics.

The classifier system studied here fills an intermediate position between the two extreme types mentioned above, showing the syntacticization of a lexical system. By doing so, it provides additional evidence of a path of evolution from strictly lexical to strictly grammatical systems, passing through a stage of syntacticization. That the path of evolution would include an intermediate stage of syntacticization is what would be expected in a functionalist view of language as a system of communication with layered levels of organization – from pragmatic to morphological through syntactic structures, as articulated in Givon (1979), Dik (1978), Foley and Van Valin (1985) – characterized by an increasing degree of rigidity in conventionalized encodings corresponding to an increasing degree of independence of the structures from the particulars of a specific speech event.

References

Adams, K.L. and N.F. Conklin, 1973. Toward a theory of natural classification. Papers from the 9th Regional Meetings of the Chicago Linguistic Society, 1–10.

Allan, K., 1977. Classifiers. Language 53, 284–310.

Allen, M.R., 1980. Semantic and phonological consequences of boundaries: a morphological analysis of compounds. In: M. Aronoff and M.L. Kean (eds.), Juncture, 9–27. Amna Libri.

Becker, A.J., 1986. The figure a classifier makes: describing a particular Burmese classifier. In: C. Craig (ed.), Noun classes and categorization, 327–344.

Berlin, B., 1968. Tzeltal numeral classifiers: a study in ethnographic semantics. The Hague: Mouton.

Berlin, B., D. Breedlove and P. Raven, 1974. Principles of Tzeltal plant classification: an introduction to the botanical ethnography of a Mayan-speaking people of Highland Chiapas. New York: Academic Press.

Breitborde, L.B., 1980. Selection and setting in Jacaltec noun classifier usage. Paper presented at the summer meetings of the Linguistic Society of America.

Bybee, J., 1985. Morphology: a study of the relation between meaning and form. Typological studies in language, 6. Amsterdam: John Benjamins.

Chafe, W., 1977. The evolution of third person verb agreement in the Iroquian languages. In: C. Li (ed.), Mechanism of syntactic change, 493–524. Austin, TX: University of Texas Press.

Cooke, J., 1968. Pronominal reference in Thai, Burmese, and Vietnamese. University of California Publications, Linguistics 52. Berkeley and Los Angeles, University of California Press.

Craig, C.G., 1977. The structure of Jacaltec. Austin, TX: University of Texas Press.

Craig, C.G., 1979. Jacaltec: field work in Guatemala. In: T. Shopen (ed.), Languages and their speakers, 39–51. Cambridge, MA: Winthrop.

Craig, C.G. (ed.), 1986a. Noun classes and categorization. Typological Studies in Language, 7. Amsterdam: John Benjamins.

Craig, C.G., 1986b. Jacaltec noun classifiers: a study in language and culture. In: C.G. Craig (ed.), 1986a, 263–294.

Craig, C.G., 1986c. Los clasificadores de nombre en Jacalteco: una inovacion kanjobalana. In: N. England (ed.), Estudios Mayas. (To be published by CIRMA, Antigua, Guatemala.)

Datz, M.D., 1980. Jacaltec syntactic structure and the demands of discourse. University of Colorado. (Ph.D. dissertation.)

Day, C., 1973a. The Jacaltec language. Indiana University Publications. Language Science Monograph 12.

Day, C., 1973b. The semantics of social categories in a transformational grammar of Jacaltec. In: M.S. Edmonson (ed.), Meaning in Mayan languages, 85–103. The Hague: Mouton.

DeLancey, S., 1986. Toward a history of Tai classifier systems. In: C.G. Craig (ed.), 1986a, 437–452.

Denny, J.P., 1976. What are noun classifiers good for? In: Papers from the 12th Regional Meeting of the Chicago Linguistic Society, 122–132.

Denny, J.P. and C. Creider, 1986. The semantics of noun classes in Proto-Bantu. In: C.G. Craig (ed.), 1986a, 297–308.

Dik, S., 1978. Functional grammar. Amsterdam: Elsevier.

Dixon, R.M.W., 1964. Noun classes. Lingua 21, 104–125.

Dixon, R.M.W., 1983. Noun classifiers and noun classes. In: R.M.W. Dixon, Where have all the adjectives gone?, 211–234. The Hague: Mouton.

Dixon, R.M.W., 1986. Noun classes and noun classification in typological perspective. In: C. Craig (ed.), 1986a, 105–112.

Downing, P., 1986. The anaphoric use of classifiers in Japanese. In: C.G. Craig (ed.), 1986a, 345–376.

England, N., 1983. A grammar of Mam, a Mayan language. Austin, TX: University of Texas Press.

Erbaugh, M., 1986. Taking stock: the development of Chinese noun classifiers historically and in young children. In: C.G. Craig (ed.), 1986a, 399–436.

Foley, W. and R. Van Valin, 1985. Functional syntax and universal grammar. Cambridge: Cambridge University Press.

Givón, T., 1970. Some historical changes in the noun class system of Bantu: their possible causes and wider implications. In: C.W. Kim and H. Stahkle (eds.), Papers in African linguistics, 34–54. Champaign, IL: Linguistic Research Inc.

Givón, T., 1975. Topic, pronoun, and grammatical agreement. In: C. Li (ed.), Subject and topic, 149–188. New York: Academic Press.

Givón, T., 1979. On understanding grammar. New York: Academic Press.

Givón, T., 1980. The binding hierarchy and the typology of complementation. Studies in Language 4, 333–377.

Givón, T., 1981. On the development of the numeral 'one' as an indefinite marker. Folia Linguistica Historica 2, 35–53. Budapest: Akademiai Kiado.

Givón, T. ed., 1983. Topic continuity in discourse: an introduction In: Topic Continuity in Discourse: A Quantitative Cross-Language Study. Typological Studies in Language, 3, 5–41. Amsterdam: John Benjamins.

Givón, T., 1985. The pragmatics of referentiality. In: D. Schiffrin (ed.), Meaning, form and use in context. Washington DC: Georgetown University Press.

Greenberg, J.H., 1972. Numeral classifiers and substantival numbers: problems in the genesis of a linguistic type. Working Papers on Language Universals 9, 1–40. Stanford University.

Greenberg, J.H., 1977. Niger-Congo noun class markers: prefixes, suffixes, both or neither. Studies in African Linguistics, supplement 7, 97–106. Papers from the 18th Conference on African Linguistics.

Greenberg, J.H., 1978. How does a language acquire gender markers? In: J. Greenberg (ed.), Universals of Human Language, 47–81. Stanford, CA: Stanford University Press.

Haiman, J. and P. Munro (eds.), 1983. Proceedings of a Symposium on Switch Reference. Typological Studies in Language 2. Amsterdam: John Benjamins.

Head, B., 1978. Respect degrees in pronominal reference. In: J. Greenberg (ed.), Universals of human language, 151–212. Stanford, CA: Stanford University Press.

Heine B. and M. Reh, 1984. Grammaticalization and reanalysis in African languages. Hamburg: Helmut Buske.

Hoekstra, E., 1986. On the relation between lexical and configurational structure. Institute of General Linguistics. Groningen: University of Groningen. (M.A. thesis.)

Hopper, P. 1986. Some discourse functions of classifiers in Malay. In: C. Craig (ed.), 1986a, 309–326.

Hunn, E., 1977. Tzeltal folk zoology: the classification of discontinuities in nature. New York: Academic Press.

Hyman, J. and P. Munro (eds.), 1983. Proceedings of a Symposium on Switch Reference. Typological Studies in Language, 2. Amsterdam: John Benjamins.

Kahr, J., 1975. Adpositions and locationals: typology and diachronic development. WPLU 19, 21–54.

Kaufman, T., 1984. Cross currents of grammatical innovation in the Mayan languages with especial reference to Tojolobal. (Ms.)

La Farge, O. and D. Byers, 1931. The year Bearer's people. Middle American Research Series. Publication 3. New Orleans: Tulane University.

Lakoff, G., 1986. Classifiers as a reflection of mind. In: C.G. Craig (ed.), 1986a, 13–52.

Li, C. and S. Thompson, 1979. Third person pronouns and zeroanaphora in Chinese discourse. In: T. Givón (ed.), Discourse and syntax. Syntax and semantics, Vol. 12, 337–354. New York: Academic Press.

Mithun, M., 1986. The convergence of noun classification systems. In: C.G. Craig (ed.), 1986a, 379–398.

Noonan, M., 1985. Complementation. In: T. Shopen (ed.), Language typology and syntactic description, 42–140. Cambridge: Cambridge University Press.

Ramsay, V., 1985. Classifiers and referentiality in Jacaltec. In: S. DeLancey and R. Tomlin (eds.), Proceedings of the First Annual Meeting of the Pacific Linguistic Conference, 289–312. Eugene, OR: Dept. of Linguistics, University of Oregon.

Shroyer, S., 1986. The use of *this* and *a* as indefinite articles in spoken English. In: S. DeLancey and R. Tomlin (eds.), Proceedings of the First Annual Meeting of the Pacific Linguistics Conference, 391–411. Eugene, OR: Dept. of Linguistics, University of Oregon.

Scalise, S., 1984. Generative morphology. Studies in Generative Grammar 18. Dordrecht: Foris Publications.

Supalla, T., 1986. The classifier system in American sign language. In: C.G. Craig (ed.), 1986a, 181–214. Categorization.

Svorou, S., 1986. On the evolution of spatial terms: locative expressions. Paper presented at the Milwaukee Morphology Meetings, April 4–6, 1986.