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A Typology of Noun Categorization Devices

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Grammatical means for the linguistic categorization of noun referents are found in just about every language of the world. Noun categorization devices range from large sets of numeral classifiers of Southeast Asia to highly grammaticalized closed sets of noun classes and genders in African and Indo-European languages. Further devices include noun classifiers, classifiers in possessive constructions, verbal classifiers and two less known types: locative and deictic classifiers. Classifiers share semantic features of animacy, humanness, shape and function. One language can combine several types of noun categorization devices. In ‘multiple classifier’ languages, the same morphemes occur in several grammatical contexts. Historically, categorization devices of one type can develop from another.

12.1 Noun Categorization Devices: The Basis for the Typology

Noun categorization devices are morphemes which occur in surface structures under specifiable conditions, denoting some salient semantic characteristics of the entity to which an associated noun refers (Aikhenvald 2000: 13–16). These morphemes (referred to as ‘classifiers’ as an abbreviation) constitute a grammatical system. A language with classifiers must have CLASSIFIER CONSTRUCTIONS, that is, separate grammatical units which require noun categorization markers.¹

This typology of noun categorization devices is primarily based on the grammatical loci of their coding. So, for instance, a numeral classifier categorizes a noun within a noun phrase containing a number word. A verbal classifier categorizes a noun within a clause. We distinguish the following types of noun categorization devices:

- i. genders and noun classes (§12.2)
- ii. noun classifiers (§12.3)

- iii. numeral classifiers (§12.4)
- iv. classifiers in possessive constructions (§12.5), and
- v. verbal classifiers (§12.6).

Two further, relatively uncommon, types are (vi) locative classifiers and (vii) deictic classifiers (§12.7).

Additional properties of noun categorization devices include:

- i. principles of choice or ‘assignment’ which can depend on semantic, and also phonological and morphological properties of a noun;
- ii. kinds of surface realization: classifiers may be free or bound morphemes.

Furthermore, different noun categorization devices – or classifiers – may or may not involve agreement within a noun phrase and/or a clause. They show systematic correlations with other grammatical categories. Different kinds of devices have preferences for different sets of semantic parameters, historical sources and paths of development.

The established classifier types correspond to *prototypes*, or *focal instances*, which display all the definitional and most of the contingent properties of a type. A language can have more than one noun categorization device (see §12.8). Classifiers can appear in several grammatical contexts – this is the essence of multiple classifier languages (§12.9). Commonalities and differences between established types of noun categorization devices as a unified phenomenon are addressed in section 12.10.

Animacy, gender and humanness can be expressed through means other than dedicated noun categorization devices. Typically, more number distinctions are made for human or animate nouns than for inanimates. Case distinctions and forms correlate with animacy in agreement with the Nominal Hierarchy. Declensional paradigms may be chosen based on animacy. Gender distinctions are often encoded in derivational devices.² All of these would be included in a typology of semantic features of animacy or humanness but are tangential for our study of dedicated means of noun categorization.

12.2 Noun Classes (or Genders)

Many languages have grammatical agreement classes, based on core semantic properties of animacy, sex and humanness, and sometimes also shape. The number of noun classes (also known as genders, or gender classes) varies – from two, as in Portuguese or French, to ten, as in Bantu, or even to several dozen, as in some languages of South America.

Traditional grammar used the term ‘gender’ for categories in Indo-European and Semitic languages which typically involve masculine and feminine. As linguists roamed further afield, they met larger systems

which did not necessarily involve just masculine and feminine. The label 'noun class' came into use for these.³

Noun classes (or genders) can be semantically transparent to a greater or a lesser extent. Their assignment can be based on semantic, morphological and/or phonological criteria. They are realized through agreement with a modifier or the predicate outside the noun itself. Examples (1) and (2), from Portuguese, illustrate masculine and feminine genders which are marked on the noun itself and on the accompanying article and adjective.

- (1) o menin-o bonit-o
 ARTICLE:MASC.SG child-MASC.SG beautiful-MASC.SG
 'the beautiful boy'
- (2) a menin-a bonit-a
 ARTICLE:FEM.SG child-FEM.SG. beautiful-FEM.SG
 'the beautiful girl'

The cross-linguistic properties of noun classes (or genders) are:

1. There is a limited, countable number of classes.
2. Each noun in the language belongs to one (or sometimes more than one) class.
3. There is always some semantic basis to the grouping of nouns into gender classes, but languages vary in how much semantic basis there is. This usually includes animacy, humanness and sex, and sometimes also shape, size and extent.
4. Some constituent outside the noun itself must agree in gender with a noun. Agreement can be with other words in the noun phrase (adjectives, numbers, demonstratives, articles, etc.) and/or with the predicate of the clause, or an adverb (see example (3)).

In some languages there is a marker of noun class on every noun: this is known as 'overt' noun class: this is what we see in examples (1)–(2) for Portuguese, and (3) for Swahili. In some languages nouns bear no marker: this is 'covert' marking: this is the case in Manambu and in Dyrirbal. Noun class systems are typically found in languages with a fusional or agglutinating (not an isolating) profile. Languages often have portmanteau morphemes combining information about noun class with number, person, case, etc.

The meanings of noun classes in the languages of the world include the following parameters:

- Sex: feminine vs. masculine, as in many Indo-European, Afroasiatic languages, in East-Nilotic and in Central Khoisan;
- Human vs. non-human, as in some Dravidian languages of India;
- Rational (humans, gods, demons) vs. non-rational as in Tamil and other Dravidian languages;
- Animate vs. inanimate, as in Siouan, from North America.

The term 'neuter' is often used to refer to irrational, inanimate gender, or a residue gender with no clear semantic basis.

Languages can combine these parameters. Zande and Ma (Ubangi, Niger-Congo) distinguish masculine, feminine, non-human animate and inanimate. Godoberi (north-east Caucasian) has feminine, masculine and non-rational genders.

Primarily sex-based genders can have additional shape- and size-related meanings. In many languages of the Sepik region of New Guinea, feminine is associated with short, wide and round, and masculine with long, tall and narrow objects. Feminine gender is associated with small size and diminutives in Afroasiatic and East-Nilotic languages; masculine includes long, thick, solid objects. Hollow, round, deep, flat and thin objects are feminine in Kordofanian and Central Khoisan languages (Heine 1982: 190-1). In Mali, a Baining language from East New Britain (Papua New Guinea), lower animates and inanimates are assigned to the feminine gender if they are large in size. If they are of average size, they are assigned to the masculine gender (Stebbins 2005: 102; Aikhenvald 2012b).

In some languages most nouns are assigned to just one noun class; in other languages different noun classes can be chosen to highlight a particular property of a referent. Manambu, a Ndu language from the Sepik area, has two genders. The masculine gender includes male referents, and feminine gender includes females. However, the gender choice depends on other factors, and can vary: if the referent is exceptionally long, or large, it is assigned masculine gender; if it is small and round, it is feminine.

Rules for the semantic assignment of noun classes can be more complex. The Australian language Dyrbal (Dixon 1972: 308-12; 2015: chapter 2) has four noun classes. Three are associated with one or more basic concepts: Class I - male humans, non-human animates; Class II - female humans, drinkable liquids, fire, fighting; Class III - non-flesh food. Class IV is a residue class, covering everything else. There are also three rules for transferring gender membership. By the first, an object can be assigned to a gender by its mythological association (through belief or legend) rather than by its actual meaning. Birds are classed as feminine by mythological association, since women's souls are believed to enter birds after death. By the second rule, if the referent of a noun X is perceived to have a physical association with the referent of a noun Y, the gender assignment for Z may reflect this. This association may be of physical similarity, or the referent of X can be used to make or catch the referent of Y. Thus, the firefly belongs to Class II (while most other insects belong to Class 1), because the flashes of light it emits are similar to sparks from a fire (Class II). And matches (and a match box which holds them) belong to Class II because they produce fire. The third transfer rule is that if a subset of a certain group of objects has a particularly important property, e.g. being harmful to humans, it can be assigned to a different class from the

other nouns in that group. Most trees without edible parts belong to Class IV, but stinging trees are placed in Class II.

A typical gender system in Australian languages contains four terms which can be broadly labelled as masculine, feminine, vegetable and residual (Dixon 2002: 449–514). A number of Australian languages have a special noun class for body parts (Dixon, Chapter 20 of this volume).

Information about noun class and number can be combined into a single affix. In Bantu languages, noun class agreement markers come in singular/plural pairs. They appear on modifiers of different kinds and on the predicate. As shown in (3), from Swahili, the noun class marker, *ki-*, also appears on the noun itself. That is, noun classes are overtly marked (Welmers 1973: 171). *Ki-* marks the singular term of noun class 7/8 (see Table 12.1) which covers inanimates.

- (3) ki-kapu ki-kubwa ki-moja ki-li-anguka
 NCL7:INAN-basket NCL7:INAN-large NCL7:INAN-one NCL7:INAN-PAST-fall
 ‘One large basket fell’

There may be fewer gender or noun class distinctions in plural than in singular. German and Russian have no genders in the plural. Noun class can be fused with case, as in the Australian languages Mangarrayi and Jawoyn (Dixon 2002: 508–9). (See also Rubin, Chapter 27 of this volume, and Amha, Chapter 26 of this volume, on gender and other categories in Semitic and Omotic languages.)

The degree of semantic motivation for noun classes varies from language to language. Noun classes in Bantu languages constitute an example of a semantically opaque system. Table 12.1 summarizes a basic semantic grid common to Bantu noun class systems (Spitulnik 1989: 207) based on the interaction of shape, size and humanness. However, these parameters provide only a partial semantic motivation for the noun classes in individual Bantu languages.

Table 12.1 *Noun classes in Bantu*

Class	Semantics
1/2	humans, a few other animates
3/4	plants, plant parts, foods, non-paired body parts, miscellaneous
5/6	fruits, paired body parts, miscellaneous inanimates
7/8	miscellaneous inanimates
9/10	animals, miscellaneous inanimates, a few humans
11/10	long objects, abstract entities, miscellaneous inanimates
12/13	small objects, birds
6	masses
14	abstract qualities, states, masses, collectives
15	infinitives

Noun class assignment in modern Bantu languages is to some extent semantically opaque, though the semantic nucleus is still discernible. Thus, in Babungo, Class 1/2 is basically human; however, it is a much bigger class than it was in Proto-Bantu and also contains many animals, some birds and insects, body parts, plants, and household and other objects, e.g. necklace, pot, book, rainbow (Schaub 1985: 175). Shape and size also appear as semantic parameters: in ChiBemba, Class 7/8 is associated with large size and carries pejorative overtones, while Class 12/13 includes small objects and has overtones of endearment (also see Denny 1976; Aikhenvald 2000: 281–3).

In a seminal study, Zubin and Köpcke (1986) provided a semantic rationale for the gender assignment of nouns of different semantic groups in German. Masculine and feminine genders mark the terms for male and female adults of each species of domestic and game animals (following the natural sex principle), and neuter is assigned to non-sex-specific generic and juvenile terms. Masculine gender is used for types of cloth, of precipitation and wind, and of minerals. Disciplines and types of knowledge have feminine gender, and games and types of metal – with the exception of alloys – have neuter gender. This is contrary to a common assumption that there is no real semantic basis for gender assignment in the well-known Indo-European languages.

In Jingulu, an Australian language (Pensalfini 2003: 159–68), nouns divide into four classes, only some of which are more or less semantically transparent. The ‘vegetable’ class mostly includes objects which are long, thin or pointed; this class happens to include most vegetables, as well as body parts such as the colon, penis and neck, instruments such as spears, fire-drills and barbed wire, natural phenomena such as lightning and rainbows, and also roads and trenches. The ‘feminine’ class includes female humans and higher animates, and also words for axes, the sun and most smaller songbirds. The semantic content of the remaining two classes, ‘masculine’ and ‘neuter’, is harder to define: masculine is mostly used for the rest of animates and neuter for the rest of inanimates, except that flat and/or rounded inanimates (most trees and eggs, and body parts such as the liver and brow) are masculine.

Noun class or gender assignment is always linked to the meaning of a noun: it will include humanness, animacy or sex. In some languages, gender can also be assigned in agreement with the morphological make-up of a noun. For instance, in German all nouns containing a derivational suffix *-ung* ‘action noun’ are feminine. Nouns which contain a diminutive, a suffix *-chen* or *-lein*, are neuter. So, the word for ‘girl’, *Mädchen*, belongs to the neuter gender by its morphology (in actual usage, a grown-up girl can be referred to as ‘she’: see Braun and Haig 2010). Phonological assignment may play a role. In Hausa, all non-sex differentiable nouns which end in *-ā* are assigned to the feminine gender (Newman 2000: 208). Or a language may have a combination of different principles.

Yimas, from the Lower Sepik family in Papua New Guinea, has eleven agreement classes. Four are chosen by the meaning of the nouns; these cover (i) human males; (ii) human females; (iii) animals; (iv) culturally important items. The rest are phonologically motivated: the agreeing constituent repeats the last consonant of the noun root. Arapesh languages of the East Sepik Province in Papua New Guinea have a noun class for male humans, and one for female humans; nouns of other semantic groups trigger similar ‘alliterative’, or phonologically based, agreement. This is always overridden by semantics; so, loanwords with human referents in Arapesh languages are assigned to classes according to whether they refer to men or to woman.⁴ In languages with alliterative, or ‘partial repeater’, agreement, the set of agreement patterns is limited (to about a dozen or so), as is expected for a noun class system. This is different from ‘repeaters’ as numeral classifiers (§12.4) and in multiple classifier systems (§12.9) which may constitute a virtually open-ended set.

Morphological realization of noun classes ranges across affixes, apophony (or vowel changes) and also tone patterns and change of stress. Some languages have more than one co-existing subsystem of noun classes: one for agreeing pronouns (including demonstratives or verbal cross-referencing) and one for adjectives and other modifiers (see Heine 1982: 195; Aikhenvald 2000: 68–75; 2010). For instance, Gaagudju, an Australian language, has a two-term gender agreement in verbal cross-referencing, and a larger system of four noun classes used on adjectives as modifiers (Harvey 1992). Baniwa, a North Arawak language, has a feminine/non-feminine distinction on demonstratives and verbal cross-referencing, and a large system of thirty noun classes on adjectives (Aikhenvald 2007 and references there).

Noun classes stand apart from other noun categorization devices in their expression, the possibility of morphological and phonological (and not just semantic) assignment, and interaction with other noun categories, such as number and case. We return to this in section 12.10.

Historically, noun class markers may come from reanalysis of lexical nouns, as in Zande (Claudi 1985: 127–35), noun classifiers with generic meanings (Dixon 2002: 497–506) and demonstratives or anaphoric elements (Greenberg 1978).

12.3 Noun Classifiers

Noun classifiers occur with a noun independently of any other constituent of a noun phrase or of a clause. They are often independent words with generic semantics (but can also be affixes to nouns; that is, bound morphemes). Thus, in Yidiñ, an Australian language, one would not generally say: ‘the girl saw the wallaby’. It is more felicitous to include a generic noun classifier and say (4) – this literally translates as ‘the person girl saw the animal wallaby’ (Dixon 1977: 480–1; 1982: 185). Syntactic functions are

indicated by subscripts. A noun classifier can be omitted if clear from the context.

- (4) [bama-al yaburu-ŋgu]_A [mina
 NOUN.CLF:PERSON-ERG girl-ERG NOUN.CLF:ANIMAL:ABS
 gangul]_O wawa-al
 wallaby:ABS see-PAST
 ‘The girl saw the wallaby’ (lit. The person girl saw the animal wallaby)

Noun classifiers as independent lexemes are a feature of numerous Australian, Western Austronesian and Mayan languages (Aikhenvald 2000). In Yidiñ, a language with twenty noun classifiers, these are of two semantic groups (Dixon 1977: 480ff.; 1982: 192ff.; 2015):

- **INHERENT NATURE** classifiers divide into humans (*waguja* ‘man’, *bunya* ‘woman’ and a superordinate *bama* ‘person’, as in (4)); fauna (*jarryu* ‘bird’, *maŋgum* ‘frog’, *munyimunyi* ‘ant’); flora (*jugi* ‘tree’, *narra* ‘vine’); natural objects (*huri* ‘fire’, *walba* ‘stone’, *jabu* ‘earth’); and artefacts (*gala* ‘spear’, *bundu* ‘bag’, *baji* ‘canoe’).
- **FUNCTION** classifiers are *minya* ‘edible flesh food’, *mayi* ‘edible non-flesh food’, *bulmba* ‘habitable’, *bana* ‘drinkable’, *wirra* ‘movable’, *gugu* ‘purposeful noise’.

A distinction between flesh and non-flesh food is typical for Australian languages with noun classifiers (Dixon 2002: 454–9; 2015, and §20.8 of Dixon, Chapter 20 of this volume). Noun class systems with a similar distinction (§12.2) can be shown to have evolved from reinterpretation of noun classifiers.

Noun classifiers may be affixes to nouns. In Ersu, a Tibeto-Burman language from China, noun classifiers can be affixed to a noun to highlight shape and size of its referent, e.g., *pu* ‘potato’, *pu-kaka* (potato-NOUN.CLF:IRREGULAR.ROUND.SHAPE.SMALL) ‘a small potato of irregular (round) shape’; *ve* ‘pig’, *ve-pulili* (pig-NOUN.CLF:FAT.SHORT.SMOOTH.SKIN) ‘a fat and short pig with smooth skin’ (Zhang 2013: 273–5). Systems of bound noun classifiers have been described for Chimila, a Chibchan language of Colombia (Malone 2004), Karo, from the Tupí family, Dâw, from the putative Makú family, and Kakua (Kakua-Nukak) (Gabas 1999, Bolaños forthcoming). They are also a feature of a number of multiple classifier languages of Amazonia and New Guinea (see §12.9).

Every noun in a language does not have to take a noun classifier. This is unlike a noun class (or gender) system where just about every noun will be assigned to a class. A noun classifier does not involve any agreement with other constituents within a noun phrase or a clause. Different noun classifiers may be used with the same noun, to disambiguate its many meanings. In Minangkabau, a Western Austronesian

language from Sumatra, one distinguishes *batang limau* (NOUN.CLF: TREE lemon) 'lemon-tree' from *buah limau* (NOUN.CLF:FRUIT lemon) 'lemon-fruit' (Marnita 1996). Several noun classifiers can occur together, highlighting different features of the referent, e.g. Yidiñ *bama bunja gumba* (NOUN.CL:PERSON NOUN.CLF:FEMALE prepubescent.girl) 'a young girl' (Dixon 2002: 456).

A noun classifier is always chosen by the noun's meaning. The meanings expressed may reflect the referent's social status, function and nature, and also physical properties, e.g. shape and size. Coatzacoquitengo Mixtec, an Otomanguean language from Mexico, has noun classifiers covering humans (females and males), inanimates, deities, animals, trees and liquids (de León 1987: 152–90). The semantic link between a noun classifier and a noun is not immediately straightforward: the classifier for animals in Coatzacoquitengo Mixtec also covers round objects, and the classifier for trees can be used to cover wood, vehicles and longish objects. In most languages of the Daly area in Australia, 'honey' takes the noun classifier for flesh food. The choice of a noun classifier in Jacalteco, a Mayan language from Guatemala, is often not quite transparent: for instance, ice is assigned to the rock class (Craig 1986: 275–6).

In Mayan languages of the Kanjobalan branch, as in Jacalteco, humans are classified according to their social status, kinship relation or age. Mam, also Mayan, has classifiers for men and women; for young and old men and women; for old men and women to whom respect is due, and for someone of the same status as the speaker. There is also a classifier for babies, and just one non-human classifier. In Australian languages, noun classifiers which refer to social status include such distinctions as 'initiated' man. Murrinhpatha, an Australian language (Walsh 1997: 256), has a classifier for Aboriginal people (which also covers human spirits) and another for non-Aboriginal people, which includes all other animates.

Nouns with non-human, or inanimate, referents are classified in terms of inherent nature-based properties from the natural domains of human interaction: animals, birds, fish, plants, water, fire, minerals and artefacts. Individual systems may vary. Minangkabau has noun classifiers for birds and for fish, and Akatek (Mayan) has one for animals. Classifiers in Murrinhpatha, from Australia, cover fresh water and associated concepts; flowers and fruits of plants; spears; offensive weapons, fire and things associated with fire, time and space, speech and language, and there is a residue classifier.

Noun classifiers often include a term for culturally important items. Mayan languages have a noun classifier for corn, a traditionally important crop, and for domesticated dogs, while Daly languages, from northern Australia, have classifiers for spears, digging sticks and spear throwers.

Noun classifiers – which form a closed class – may have to be distinguished from generic nouns, an open class. In Yidiñ, a special interrogative

pronoun meaning ‘what (generic)?’ presupposes a classifier as the answer. There is another interrogative whose meaning is ‘generic being known, what specific?’ which presupposes a specific noun in the answer. Another decisive criterion is how obligatory the classifiers are, and whether it is possible to formulate explicit rules for their omission (see also §12.8, and Dixon, Chapter 20 of this volume).

Syntactic structures superficially similar to noun classifiers can be found in many languages. In English it is possible to use a proper name together with a descriptive noun phrase, such as *that evil man Adolf Hitler*. However, this type of apposition is rather marked and used to achieve rhetorical effect. Lexico-syntactic mechanisms of this kind may well be an historical source of noun categorization devices. Noun classifiers are different from derivational components in class nouns, such as *berry* in English *strawberry*, *blackberry*, *boysenberry* and similar terms with their limited productivity, high degree of lexicalization and the fact that they are restricted to a closed subclass of noun roots.⁵

12.4 Numeral Classifiers

Numeral classifiers are a well-known feature of many isolating and highly analytic languages from Southeast Asia, including Japanese, Burmese, Thai, Lao, and also of numerous Tibeto-Burman languages. Numeral classifiers appear next to a lexical number word and sometimes also next to a quantifier. A numeral classifier categorizes the referent noun in terms of animacy, shape and other inherent properties.

Korean has at least 154 obligatory numeral classifiers. Nouns with non-human reference can be classified based on their nature, shape or arrangement, as in (5)–(7), from Lee (2014: 23).⁶

- (5) sey mali kom
three NUM.CL:ANIMAL bear
‘three bears’
- (6) sey calwu yenphil
three NUM.CL:LONG pencil
‘three long pencils’
- (7) sey katak sil
three NUM.CL:STRAND thread
‘three strands of thread’

Humans are categorized depending on their status and sex. For instance, the numeral classifier *pwun* refers to respected persons (and also the Christian God, Buddha and other gods); the classifier *myeng* is a neutral way of referring to a person. The classifier *nom* refers to a despicable or insignificant male, and *nyen* to despicable and insignificant females, e.g.

kkangphay twu nom (gangster two NUM.CL:DESPICABLE.MALE) ‘two male gangsters’, *kkangphay twu nyen* (gangster two NUM.CL:DESPICABLE.FEMALE) ‘two female gangsters’ (Lee 2014: 42–3).

Numeral classifiers have been also described for inflectional and synthetic languages, e.g. Tibeto-Burman, Dravidian, Indic, Turkic and numerous languages from North America (especially Wakashan and Algic), Amazonia and New Guinea. They are a prominent feature of Austronesian languages (including Oceanic, Western Austronesian and Formosan). In African and Australian languages they are a rarity.⁷

Contrary to previous assumptions, there is no connection between language type (as outlined in Chapter 1 of this volume) and the presence or absence of numeral classifiers. Greenberg’s (1972) hypothesis that if a language has numeral classifiers it does not have obligatory number on nouns has been proved erroneous. Dravidian and Indic languages with numeral classifiers have an obligatory category of nominal number. The tendency to lack an obligatory number distinction holds only for languages of highly analytic and isolating profile with numeral classifiers (further details are in Aikhenvald 2000: 100–1; Nomoto 2013).

In terms of their realization, numeral classifiers can be independent words as in Burmese, Vietnamese and other languages with isolating tendencies, and also in Korean, Japanese and Uzbek (Beckwith 1998). Or they can be affixes to number words, as in Nootka (a Wakashan language), Warekena and Bahuana (Arawak languages from northern Amazonia) and Halkomelem (a Salish language). In languages with a highly synthetic profile, they can appear fused with number words, as is the case in Yurok (Algic), Carrier (Athabaskan) and Nivkh (a Paleo-Siberian isolate).⁸

In many Southeast Asian languages, including Thai and Lao, a noun itself can be fully or partially repeated in the numeral classifier slot to refer to it being counted (a similar principle has been described for Truqese, a Micronesian language, by Benton 1968). Such ‘repeaters’ are typically used if a noun cannot be subsumed under any of the existing classifiers. Mal, a Mon-Khmer language (Wajanarat 1979: 295–6), has twenty-six established classifiers. The classifier follows the numeral which is postposed to the noun. In (8), ‘pots’ are classified as round things based on their shape.

- (8) ʔən ʔui ʔɔɔi pʰeʔ lɛʔ
 I have pot three NUM.CL:ROUND.THINGS
 ‘I have three pots’

In (9), a classifier for ‘persons’ is used to count children:

- (9) ʔən ʔui khwan thiat phoon lɔŋ
 I have child four NUM.CL:PERSON
 ‘I have four children’

Nouns which cannot be subsumed under the existing classifiers include *ciaŋ* ‘house’, *duup* ‘hut’, *bɔh* ‘mountain’, *ŋe* ‘day’. They have to be used with numbers in a repeater construction whereby the noun is used as a unique classifier to ‘categorize itself’ (Wajanarat 1979: 298):

- (10) ʔən ʔui ciaŋ ba ciaŋ
 I have house one NUM.CL:HOUSE(REPEATER)
 ‘I have one house’ (lit. I have house one house)

The presence of repeaters (sometimes also called auto-classifiers or self-classifiers) makes the set of numeral classifiers almost open-ended. No language has just repeaters as the only classifying technique. Grammaticalized repeaters often give rise to classifiers as a closed or semi-closed class of affixes to a numeral. In Kilivila, *iga* ‘name’ is a phonologically ‘depleted’ (shortened) form of the repeater *yegila* ‘name’ in a classifier function (Senft 1996: 171, 353). Repeater technique is restricted to numeral classifiers and classifiers in multiple environments – see section 12.9. It is superficially similar to alliterative agreement (see §12.2).

Not every noun in a language has to be assigned a classifier. In Vietnamese and in Burmese, abstract nouns do not require classifiers.⁹ Some languages have a default classifier which can replace more specific classifiers under specialized pragmatic conditions. Japanese has a few specific classifiers used with abstract nouns, including *ken* ‘incident’, *toori* ‘method’, *han* ‘crime’, *denwa* ‘phone call’. Each of these can be replaced with a default general classifier *tsu* (Downing 1996:73).¹⁰ The classifier *kay* ‘small individuated items’ in Korean can replace specific classifiers for smallish inanimate entities. For instance, a pencil can be referred to with a classifier for long items, as in (6). Alternatively, if the speaker focuses on the counting or on the number of objects rather than the object itself, *kay* can be used, as in (11):

- (11) yenphil twu kay
 pencil two NUM.CL:DEFAULT
 ‘two pencils’

The general classifier *kay* can also be used to count objects for which no specific classifier is available (Lee 2014: 61–2), such as ‘watches’ in (12):

- (12) sikye twu kay
 watch two NUM.CL:DEFAULT
 ‘two watches’

Numeral classifiers can occur on small numbers only. In Telugu, a Dravidian language, classifiers are not used with numbers larger than ten. In Nung, a Tai language (Saul and Wilson 1980: 27), classifiers are optional with multiples of ten. A noun can occur with different classifiers to disambiguate their referents, as we saw for ‘gangsters’ in Korean.

The ways in which classifiers are used in languages with a large set may vary from speaker to speaker, depending on their social status and competence (Adams 1989). Japanese has several hundred numeral classifiers; however, speakers in day-to-day life tend to use no more than forty (Downing 1986: 346; Denny 1979). In this (and in the ways they are acquired by children) numeral classifiers are much more similar to sets of lexical items than to a limited set of noun classes (see Carpenter 1987).

The choice of a numeral classifier is always determined by the semantics of the noun referent. The size of classifier system and the semantic parameters vary. A small system may consist of just a human versus non-human distinction, as is the case in Saaroa and a few other Formosan languages (Pan 2013: 348–9; Li 2006). Northern Subanen, a Philippine language, has three sortal classifiers: *buuk* ‘non-flat’, *laad* ‘flat’ and *tawan* ‘human’. The classifier *buuk* functions as the default classifier (Daguman 2014: 87). An incipient numeral classifier system may be limited to just one term for humans, e.g. Boumaa Fijian *lewe* ‘numeral classifier: person’ (Dixon 1988: 148), Bulgarian *dúši* ‘numeral classifier: human males’ (Cinque and Krapova 2007, see also Aikhenvald 2000: 120–1). Other nouns are not classified.

Typical semantic parameters in larger systems include animacy, physical properties (such as dimensionality and shape), consistency, nature, functional properties (e.g. object with a handle) and arrangement (e.g. bunch). There may be unique classifiers. Yurok, an Algic language (Robins 1958: 86–92), has fifteen classifiers (fused with number words) for (a) human beings, (b) birds and animals, (c) round things (including rocks, dollars, etc.), (d) tools, (e) plants, (f) trees and sticks, (g) body parts, (h) ropes, worms and snakes, (i) flat things, (j) houses, (k) boats, (l) times, (m) days, (n) arm’s lengths, (o) finger joints (used as measurement for a type of shell). There can also be specific classifiers for culturally important items. Nivkh has thirty-three numeral classifiers. These include classifiers for means of transport (sledges, boats), for fishing gear (fishnet cells, fish-spears, and poles for fish-spears) and for poles for drying fish (Gruzdeva 2004). The culture and lifestyle of the people can thus be reflected in the classifier system. A few languages (e.g. Kana, from Nigeria, and a number of New Guinea languages: Aikhenvald 2000: 287–8) have no classifier for animates, or humans: when counted, these are classified by shape or by social function.

Vietnamese and a few other Austroasiatic languages employ different classifiers when counting people of distinct social groups, for instance, ‘clergymen’ versus ‘ordinary people’. Vietnamese and a number of Tibeto-Burman languages have an array of kinship-based classifiers and classifiers for family groups.¹¹

Numeral classifiers typically fall into two categories. Sortal classifiers characterize a referent. These are illustrated in (5)–(6) and (8)–(12). Mensural classifiers provide information about the properties of the referent and the arrangements in which it may occur, or how it is measured. Mensural classifiers in Korean are illustrated in (7) and in (13). Mensural classifier *twulum* in (13) reflects arrangement of fish or dried vegetables on a string (Lee 2014: 73).

- (13) *chenge twu twulum*
 herring two NUM.CL:STRING
 ‘two strings of herring’

Sortal and mensural classifiers may differ in their properties. In Korean, a sortal classifier may occasionally be omitted with the number word ‘one’ in its indefinite meaning (Lee 2014: 38). A mensural classifier can never be omitted. A noun may be able to occur with just one sortal classifier, and several mensural classifiers depending on the quantity and arrangement. In Tzeltal, a Mayan language, the noun *lagrio* ‘brick’ takes one sortal classifier *pech* ‘rectangular non-flexible object’. Mensural classifiers this same noun can occur with are *latz* ‘stack of bricks’, *chol* ‘aligned bricks’ and *bus* ‘pile of bricks’ (Berlin 1968: 175). Classifiers may have to be distinguished from measure words or quantifiers. Almost every language, whether it has numeral classifiers or not, has quantifiers whose choice correlates with the meaning of a noun, or its countability. For instance, in English *much* is used with non-countable nouns and *many* with countable nouns; other languages have just one word covering ‘much’ and ‘many’. The choice of quantifying expressions may also depend on the properties of the referent noun; for instance, in English we include *head* in *five head of cattle*, *stack* in *three stacks of books*, *flock* in *two flocks of birds* and so on. In Bulgarian, mass nouns can only be counted if a measure term is included, e.g. *dva paketa cigari* (two packets cigarettes) ‘two packets of cigarettes’, *deset glavi ovce* (ten head sheep.PL) ‘ten sheep’ (Cinque and Krapova 2007: 2).

These quantifying expressions are not numeral classifiers. Firstly, they do not fill an obligatory slot in the numeral-noun construction but are instead used in a type of construction which is also employed for other purposes. Quantifier constructions in English, such as *three head of cattle* or *a slip of a girl*, are in fact a subtype of genitive constructions. This is a major reason why English cannot be said to have numeral classifiers.¹² Secondly, quantifying expressions in English and in Bulgarian are an open class, each with a lexical meaning of their own, while in most languages numeral classifiers are a closed class.¹³

Historically, numeral classifiers can develop from measure words. In Kana, a Cross-River language from Nigeria, the numeral classifier *ákpó*, used to count ‘inanimate objects with a trunk’ (including trees), comes from *ákpó* ‘length’ (Ikoro 1994; 1996: 90–5).

12.5 Classifiers in Possessive Constructions

Categorizing a noun in a possessive construction may involve either categorizing the semantic nature of a relationship between the possessor and the possessee or categorizing the possessee. Classifiers in possessive constructions interact with the types, and the expression, of possession in a noun phrase.

Generally speaking, a possessor in a possessive construction tends to be animate or human.¹⁴ The rarity of classifiers categorizing the possessor in a possessive construction may be due to the limitation on what a possessor can be in the first place. A clear example of possessor classifiers comes from Dâw, a member of the putative Makú family in Amazonia. The language has two classifiers: *-dee'* for inanimate possessor and *-ěj* for animate possessor (Martins 1994: 138–41).

12.5.1 Relational Classifiers

Relational classifiers categorize the relationship between a possessee and a possessor, and the ways in which the possessed can manipulate the possessee – that is, whether the possessee is to be eaten, drunk, worn, etc. Unlike other types of classifiers, their choice is determined by a combination of relationship between the possessor and the possessee, and also the properties of the possessee. One drinks what is drinkable, and eats what is edible. This is similar to selectional restrictions on verbal objects – such as ‘eat’ and ‘drink’ (which, in Oceanic languages, have given rise to classificatory morphemes).

Relational classifiers are an almost exclusive property of the Oceanic subgroup of Austronesian languages (see §29.4.1 of Guérin, this volume).¹⁵ A minimal system involves having just one relational classifier for ‘alimentary’ possession (food), as in Paluai (Schokkin 2014: 98). Kaliai-Kove and Manam add to this a classifier for general possession (everything else) (also see Lichtenberk 1983; Dixon 2010: 276–7). Relational classifiers are not used with inalienably, or ‘directly’, possessed nouns, such as parts of the human body. In Manam, an inalienably possessed noun *paŋana-gu* (head-my) means ‘my head’ as a part of my body. The same noun ‘head’ can be used with the alimentary classifier, *ŋana*, but with a different meaning: *paŋana ŋana-gu* (head REL.CL:ALIMENTARY-1sg) means ‘my head which I am going to eat’ (for instance, a fish head). When used with a general classifier *ne-*, *paŋana ne-gu* (head REL.CL:GENERAL-1sg) ‘my head as general possession’ (e.g. a head I found somewhere).

North-east Ambae has four possessive classifiers: *ga-* ‘food possession’, *me-* ‘drink possession’, *bula-* ‘natural or valued object possession’ and *no-* ‘general possession’. ‘Our food’ will be referred to as *ga-da hinaga* (REL.CL:FOOD-1SGINCL.POSS food), and medicine, considered drinkable, as *me-*

mu panadol (REL.CL:DRINK-2sgPOSS panadol) ‘your panadol’. The classifier *bula-* covers ownership of animals and crops, natural items, European goods and objects of adornment. The classifier *no-* is used with the remainder of the nouns (Hyslop 2001: 177–80).

Polysemous nouns can be disambiguated with classifiers. *Matui* ‘coconut’ refers to mature coconut for eating if used with *ga-*, to juice from mature coconut for drinking if used with *me-*, to a coconut tree or plantation if used with *bula-* or to coconut tree or fruit to be used for a specific purpose (e.g. selling, or used in building) and particularly copra, if used with *no-*.

Relational classifiers may reflect culture-specific ways of handling the possessed noun. Fijian dialects of Eastern Viti Levu have a classifier for an object which the possessor contributes ‘as a customary obligation – a mat or pig for presentation at a feast, a house being built for a chief, or a spade to be used in a communal garden project’ (Geraghty 2000: 246). This same marker (*loga-/laga-*) is also used as a relational classifier for totems in part of north-east Viti Levu. A classifier system may contain a form for possessing valuable objects, as in Raga (Lichtenberk 1983: 154).

12.5.2 Possessive Classifiers

Possessive classifiers categorize the possessed noun within a possessive noun phrase (without reference to the way it is handled). In Yuman languages possession of alienably possessed nouns is expressed either by a noun followed by a classifier with affixes indicating possession, or by a noun with possessive suffixes attached to it. There are two classifiers, one for ‘pets and domestic animals’, and the other a general one (Hualapai, Maricopa *-hat* ‘pet’; Hualapai *-wi:nych*, Maricopa *nywish* ‘general possession’).

Or a larger subset of generic nouns can be used as classifiers. In Palikur, a North Arawak language spoken in northern Brazil and French Guiana, only five of the many generics can be used as classifiers (Aikhenvald and Green 2011). The generic noun *-pig* ‘pet’ is used to categorize a possessed noun as a domestic animal, as in *pi-pig pewru* (2sg-pet dog) ‘your pet dog’. The form *-mana* ‘food’ is used with fruit and vegetables, as in *pi-mana uwas* (2sg-food orange) ‘your orange’; the form *-mutra* is used with plants, e.g. *n-amutra pilatno* (1sg-plant banana) ‘my plant-banana’ (the one I planted); *-win* ‘catch’ is used with ‘animals caught to eat’, as in *nu-win arudiki* (1sg-catch tapir) ‘my catch-tapir’ (the tapir I caught) and *-kamkayh* ‘child’ is used to refer to children, as in *nu-kamkayh awayg* (1sg-child boy) ‘my son’.¹⁶

Possessive classifiers tend to occur in constructions with alienable possession, but this is not a universal rule. If classifiers are used in possessive constructions and in other contexts – such as numeral, verbal or noun

classifiers – they may be able to occur with inalienably, and with alienably possessed nouns. In Hmong, a Hmong-Mien (or Miao-Yao) language (Bisang 1993: 29–30), classifiers can also be used with inalienably possessed nouns (such as ‘uncle’ in (14), and with alienably possessed nouns (‘sword’ in (15)).¹⁷

- (14) nws tus txiv ntxawn tus
 he CLF:LIVING.BEING uncle CLF:LIVING.BEING
 ntxhais
 daughter
 ‘the daughter of his uncle’
- (15) nws rab riam ntaj
 he CLF:ARTEFACT sword
 ‘his sword’

There is one difference in classifier use with alienable and with inalienable items in Hmong: a classifier can be omitted if the item is inalienably possessed, but not if it is alienably possessed. *Paj caj poj niam* (Paj Caj’s wife) or *koj npe* (you name) ‘your name’ do not have to have a classifier. The same set of classifiers is used with numerals, e.g. *ib tus tsov* (one CLF:LIVING.BEING tiger) ‘one tiger’. A noun classifier accompanying a noun imparts a definite reading to the noun phrase, e.g. *tus tsov* (CLF:LIVING.BEING tiger) ‘the tiger’ (see §12.9).

12.6 Verbal Classifiers

Verbal classifiers (also called verb-incorporated classifiers) occur on the verb, categorizing a noun – typically in S (intransitive subject) or O (direct object) function – in terms of its shape, size, structure or position, and sometimes also animacy. Innu, an Algonquian language, has eight verbal classifiers, referring to shape, nature and consistency of S and O (Drapeau and Lambert-Brétière 2011: 302–4). In (16), verbal classifier *-eci-* ‘sheet-like’ categorizes a ‘scarf’ in S function:

- (16) mâk ni-tâpiškâkan mišta-miš-eci-ši-pan
 and 1sg-scarf very-big-VCL:SHEETLIKE-ANIM.INTR-PRT
 ‘And my scarf was very large’

In (17), verbal classifier *-âšku-* ‘long and rigid’ categorizes the pipes, in O function.

- (17) putitê-y-âšku-mutâ-w ukutuškwêw-a anitêhê micwâp-it
 inside-LK-VCL:LONG. pipe-PL there house-LOC
 RIGID-install-TI2-3
 ‘He installs the pipes there inside the house’

Verbal classifiers can also refer to an oblique argument, instrument or location. In (18), the classifier *-āšku-* ‘long and rigid’ refers to the instrument, ‘stick’.

- (18) êkwê matuštwe-y-āšku-w-ât ašit mištikw-ihu
 then throw.in-LK-VCL:LONG.RIGID-with. with stick-OBV
 instrument.TA-3.3'.CJ

‘Then he threw it (the caribou skin) in the fire using a stick’

Verbal classifiers never categorize transitive subject (or A: see Aikhenvald and Dixon 2011: 157–67 for a motivation). Verbal classifiers may have a term for animate beings (as does Haida) but do not have to. Waris, a Papuan language from the Border family, has twelve verbal classifiers which characterize the S or O argument of a verb in terms of consistency (e.g. soft and pliable, compact), shape (spherical, leaf-like) and nature (e.g. dead game) (Brown 1981: 101; a similar system has been described for Imonda by Seiler 1986: 119–34).

In a number of languages, verbal classifiers can be traced to grammaticalized incorporated body part nouns. For instance, in Gumuz, a language of uncertain affiliation from Ethiopia (Ahland 2012: 269–335), a classifier deriving from ‘eye’ categorizes small seed-like objects, liquids, entities associated with wounds, fire and outer coverings, and one deriving from ‘belly’ refers to entities that have a concave surface or encompass a large area, such as bowls, pits and fields. In Palikur, an Arawak language, a classifier deriving from ‘nose’ categorizes pointed objects, such as needles (Aikhenvald and Green 2011).

Synchronically, verbal classifiers can be distinguished from incorporated body part terms. For instance, a clause in Palikur can include both a full noun and its classifier within the verb. In contrast, if a noun is incorporated into a verb, it cannot occur together with an overt noun referring to the same argument. Incorporated nouns, but not classifiers, can undergo lexicalization (Aikhenvald and Green 2011: 426–9). The development from body parts to classifiers may have initially involved classificatory noun incorporation (see Mithun 1984; and discussion of Innu in Drapeau and Lambert-Brétière 2011: 314–15).

Classificatory verbs are a subtype of verbal classifiers. They are a feature of a number of North American Indian languages, including Athabaskan-Eyak, Wakashan and some Iroquoian languages, a number of Tibeto-Burman languages, and Ika and Chimila, two languages from the Chibchan family.¹⁸ Typically, there are different verbal stems for handling, existence and location of objects of different shapes (e.g. round things, long things, granular things), and in different arrangements (things in bags, piles and so on). That is, sets of classificatory verbs interact with verb types. There may be a stem for animate objects. Classificatory stems are arranged into paradigmatic sets whose choice depends on the properties (e.g. animacy, shape, form, arrangement and consistency) of the S/O argument (see Rice and de

Table 12.2 *Mescalero Apache classificatory verb categories: 'be located'*

1.	- <i>q</i> 'single, solid, round inanimate object'
2.	- <i>tij</i> 'single animate object'
3.	- <i>la</i> 'dual objects of any kind; a rope-like object'
4.	- <i>tq</i> 'elongated, rigid object; a stick-like object'
5.	- <i>l-tsuus</i> 'flexible object; a cloth-like object'
6.	- <i>ka</i> 'contents of a shallow, open container; a cup- or dish-like object with its contents; a rigid container with its contents'
7.	- <i>jaash</i> 'plural objects of any kind; uncontained dry and loose or granular substance, uncontained sand- or flour-like substance; a dry mass'
8.	- <i>tte</i> 'uncontained wet or damp mass; dough- or mud-like substance'
9.	- <i>l-tq</i> 'flexible container with its contents'
10.	- <i>a</i> 'indefinitely shaped single solid object'

Reuse, Chapter 23 of this volume). A typical example of suppletive classificatory verbs comes from Mescalero Apache (Rushforth 1991: 253): see Table 12.2. The stem means 'be located':

Alternatively, classificatory verbs categorize the intransitive subject argument in terms of its orientation or stance in space, and also to its inherent properties. In Enga, a Papuan language, a verb meaning 'stand' is used with referents judged to be tall, large, strong, powerful, standing or supporting, e.g. men, houses, trees; 'sit' is used with referents judged to be small, squat, horizontal and weak, e.g. women, possums and ponds. Similar systems have been described for Ku Waru and Kewa, also from the Papuan region.¹⁹ Classificatory verbs in Dhegiha Siouan languages have different forms depending on the number of referents and their physical properties. That is, noun categorization through verbs interrelates with number.

Cross-linguistically, classificatory verbs tend to belong to the semantic groups of handling, motion, location and existence. This is the case in Athabaskan and in Wakashan languages, and also Ika and Chimila, Chibchan languages from Colombia.²⁰ Verbal classifiers may have similar restrictions. In Palikur they are used with transitive verbs of affect and handling, and stative verbs of dimension, physical property and colour (Aikhenvald and Green 2011: 420–2).

Classificatory verbs differ drastically from a lexical selection of a verb in terms of physical properties or the position of an object (though a set of classificatory verbs may be restricted to verbs of putting, or posture). Most languages have lexical items similar to English *drink* (which implies a liquid O), or *chew* (which implies an O of chewable consistency). Unlike such verbs, classificatory verbs make consistent paradigmatic distinctions in the choice of semantic features for their S/O argument throughout the verbal lexicon. While English distinguishes liquid and non-liquid objects only for verbs of drinking, classificatory verbs provide a set of paradigmatic oppositions for the choice of verb sets depending on the physical properties of all kinds of S/O. Having regular verbal paradigms whose

choice is governed by the properties of the object or the intransitive subject is crucial in determining whether a language has classificatory verbs or not. English does not have classificatory verbs: there are simply no paradigmatic sets of verbs whose choice depends on the properties of any constituent. Having a few verbs – like *eat* and *drink* in English – whose choice correlates with lexical selection of a type of object they take is fundamentally different from regular paradigms of classificatory verbs in, say, Athabaskan languages.²¹

Similarly, posture verbs in many languages tend to occur with objects of a certain shape. For instance, in Russian and in German, long vertical objects usually ‘stand’, and long horizontal ones ‘lie’ (Borneto 1996). However, the correlations between the choice of the verb and the physical properties of the object do not apply across the whole lexicon. Therefore these verbs cannot be considered ‘classificatory’. In each case, one requires a fine-grained semantic and syntactic analysis of each language, in order to determine the exact kind of nominal classification device.

A language may have more than one subset of verbal classifiers. Subsets can be in complementary distribution. Waris combines sixteen verbal classifiers (prefixes to a verb) with eight classificatory verbs. The choice of verbal classifier depends on consistency, shape, function, arrangement and quantity of the direct object (O). Classificatory verbs are essentially existentials and combine reference to the position of the intransitive subject (S) and its inherent properties. Similarly to Enga, the classificatory verb *lohv* ‘be standing’ is used with vertical or ‘standing’ referents such as man, tree, dog, sun, sky and the verb *av* ‘be sitting’ with things classified as small roundish such as insects, small animals, women; the verb *liv* ‘lie’ is used with water and liquids. Prefixed classifiers are a later development in the language than the classificatory verbs.²²

The origins of classificatory verbs may be manifold. Fortescue (2006) demonstrates that, similarly to verbal classifiers, some classificatory verbs developed from incorporated nouns; others may have evolved from ordinary verbs via semantic reinterpretation.²³

Classificatory verbs are found in a few – but far from all – spoken languages. In contrast, they are pervasive in signed languages (though even then, not universal: Zeshan 2003; Zeshan and Palfreyman, Chapter 7 of this volume; Schembri 2003) – this may be linked to the prominence of dimensionality and shape in these visual languages. How the present typology of noun classification devices applies to sign languages is a matter for further study.

12.7 Locative and Deictic Classifiers

Locative classifiers occur on locative prepositions and postpositions. They categorize the head noun in terms of its animacy or physical properties,

including form and shape. Locative classifiers are restricted to languages of the Carib and Arawak families in South America.²⁴ Palikur, an Arawak language from Brazil, has twelve locative classifiers whose choice is determined by semantic features of shape, dimensionality and boundedness, in addition to two specific classifiers: one for water, and one for roads and rivers.

Locative classifiers in Palikur are used as locative adpositions meaning ‘on’ or ‘in’ – see (19)–(21). The person, number and gender of the head noun can be cross-referenced on them, and they can be accompanied by additional directional and locative suffixes.

- (19) *a-peru* ah
 3neuter-on.LOC.CL.BRANCH LIKE tree
 ‘on the tree’
- (20) *a-hakwa-t* un
 3neuter-in.LOC.CL.WATER-DIR water
 ‘into the water’
- (21) *pi-wan min*
 2sg-arm in.LOC.CL.VERTICAL
 ‘on your arm’

Lokono, also from the Arawak language family, has five locative classifiers: one, *koborokon* ‘inside of an animate body, among living beings’, correlates with the animacy of the referent of the head noun; three correlate with consistency (*loko* ‘inside a hollow or solid object’; *rakon* ‘in a fluid’; *kolokon* ‘in fire or light’), and one with interioricity and dimensionality (*roko* ‘on the inside surface of’).

Locative classifiers stand apart from classifiers of other types in that they hardly ever occur in multiple classifier systems – see section 12.9.

Deictic classifiers occur on deictics and articles within a noun phrase and categorize the noun referent in terms of its inherent properties and position in space, including horizontal or vertical. Nouns are typically classified by their canonical position, which correlates with their shape and extendedness. They are attested in the Dhegiha subgroup of Siouan languages from North America, e.g. Mandan *re-wək* ‘this one (lying)’; *re-rək* ‘this one (sitting)’²⁵ and most languages of the small Guaycuruan family in Argentina, especially Toba and Pilagá.²⁶ Deictic classifiers in Pilagá refer both to the position of the noun in space and to its form, shape and nature. There are no special classifiers for humans, or animates. Classifiers include *da7* ‘vertically extended, long’ (e.g. humans, trees, horses), *ñi7* ‘sitting/non-extended, rounded’ (mammals, snakes, insects, buildings, fruits), *di7* ‘lying/horizontally extended’ (dead people, fishes, towns). The semantic basis for classifier choice is not always fully transparent. For instance, fire and stones are classified as ‘horizontal’, and

buildings and animals as 'sitting'. Deictic classifiers in Guaycuruan and in Siouan languages transparently derive from positional verbs.²⁷

12.8 Languages with Several Types of Noun Categorization Devices

One language can combine several types of noun categorization devices. Akatek and a few other Mayan languages have noun classifiers and numeral classifiers. Noun classes and numeral classifiers co-exist in a few Dravidian and Indic languages (Emeneau 1956). A number of prefixing Australian languages have noun classes and noun classifiers. Ngan'gityemerri, an Australian language (Reid 1997), has eight noun classes and ten noun classifiers. The two systems partly overlap in their meanings. Both noun classes and noun classifiers have terms for animals; plant food and vegetable; trees/things; and bamboo spears. Noun classes cover (i) male, (ii) female, (iii) human group, (iv) body parts and canines. There are special noun classifiers for strikers, fire, liquid, digging sticks, large woomeras and canegrass spears. The only pair that shares similarity in form is the noun class for plant food and vegetable *mi* and the corresponding noun classifier *miyi*. Noun class markers are obligatory on nouns and on modifiers, including adjectives.

Many Oceanic and Micronesian languages have relational classifiers in possessive constructions (involving alienably possessed nouns) and numeral classifiers. Ponapean (Rehg 1981) has thirty numeral classifiers, and also several score relational classifiers whose use is determined by speech register and honorification of the possessee (Keating 1997).

Palikur, an Arawak language from northern Brazil and French Guiana, has masculine, feminine and neuter distinctions in pronouns and demonstratives, and also separate sets of numeral classifiers, possessive classifiers, verbal classifiers and locative classifiers. The systems show an insignificant overlap in form and meaning, and allow the referent to be categorized in different ways. In (19) and (20), tree and water are categorized as 'neuter' by cross-referencing prefixes, and as vertical or flat by locative classifiers. In (22), 'cord' is categorized in three ways: as belonging to neuter gender, as a linear elongated object (by a numeral classifier) and as a vertical object (by a locative classifier):²⁸

- (22) yu bat a-min paha-tra akati
 crow sit 3neuter-on:LOC.CL: one-NUM.CL:LINEAR cord
 VERTICAL
 'A crow sat on a vertical cord'

Co-existence of several systems of noun categorization within one language shows that different classifier types are relatively independent. Each allows the speaker to highlight different properties of the same referent.

12.9 ‘Multiple Classifier’ Languages

The same set of noun categorization markers may occur in several environments.²⁹ This is what we refer to as ‘multiple classifiers’. In (23), from Tariana, a North Arawak language from Brazil, the classifier *-dapana* ‘HOUSES AND HABITATS’ may appear on a demonstrative, a numeral, an adjective, a possessive marker and as a derivational suffix on a noun. This is in addition to two pronominal distinctions, feminine and non-feminine, in verbal cross-referencing (here the prefix *di-* ‘third person singular non-feminine’). Example (23) comes from pedagogical materials created by Marino Muniz, a native speaker.

- (23) ha-dapana pa-dapana di-tape-dapana
that-CLF:HOUSE one-CLF:HOUSE 3sg.nf-medicine-CLF:HOUSE
hanu-dapana wa-ya-dapana-nuka
big-CLF:HOUSE 1sg-POSS-CLF:HOUSE-PRESENT.VISUAL
‘That one big hospital (lit. medicine house) is ours’

Examples like (23) are rare in texts and conversations. In many multiple classifier languages from northern Amazonia, the head of the noun phrase is often omitted, so much so that classifiers are employed more frequently than nouns and are highly functional in discourse.

Classifiers used in multiple environments may show subtle differences as to their placement in different classifier constructions. They may be omissible in some classifier contexts, but not in others. The choice of classifiers is always semantically based. Not every noun may be subsumed under established classifiers.

Skidegate Haida (Hori 2000) has about thirty classifiers used with verbs (categorizing the S/O constituent, as is typical for verbal classifiers). The same set is used with all the number words. In (24) ‘rope’ is categorized as ‘extensible object’ with the classifier *sga-* on the number word ‘(be) one’ and the verb ‘fall’:

- (24) qwaay sga-sgawansəŋ ñə=sga-guy-da-gən
rope VCL:EXTENSIBLE- 1sg.AGENT=VCL:EXTENSIBLE-
 (be)one ‘fall’-CAUS-PAST
‘I dropped one piece of rope’

If the object of a verb refers to plural entities, the classifier *xa-* ‘plural objects’ is used on the verb, but not on the number word. In this context, the classifier interrelates with number.

- (25) qwaay sga-sdiŋ ñə=xə-guy-da-gən
rope VCL:EXTENSIBLE-(be)two 1sg.AGENT=VCL:PLURAL.OBJECTS-
 ‘fall’-CAUS-PAST
‘I dropped two pieces of rope’

This ‘mismatch’ shows a subtle difference between classifiers in two distinct contexts. In addition, number words often occur without a classifier, while verbs do not.

Hmong (Bisang 1993, Jaisser 1987) employs the same set of morphemes with number words (26), demonstratives (27), in possessive constructions (14)–(15) and as noun classifiers (28). The classifier follows the number word and precedes the noun which is followed by a demonstrative.

- (26) lawv muaj rau tus me nyuam
 they have six CLF:LIVING.BEING child
 ‘They have six children’

(Jaisser 1987: 172)

- (27) lub tsev no
 CLF:OBJECT house this
 ‘this house’

(Jaisser 1987: 171)

- (28) tus tsov tshaib tshaib plab
 CLF:LIVING.BEING tiger be.hungry be.hungry stomach
 ‘The tiger was very hungry’

- (28a) *tsov tshaib tshaib plab

We can recall, from (14) and (15), that classifiers in possessive constructions are used differently depending on the possessive relationship. The use of noun classifiers correlates with the definiteness of the referent. If the referent is definite, a classifier cannot be omitted: (28) is grammatical, and (28a) is not.

Multiple classifier systems may involve further contexts. In Dhegiha (Siouan) languages, deictic classifiers (see §12.7) occur on interrogative words, e.g. Omaha-Ponca *áwa-the* (what-CLF:STANDING.INANIMATE) ‘what (standing inanimate thing)?’ (Rankin 2004: 216–17). In Anamuxra, classifiers are used with adjectival and demonstrative modifiers, with numerals and interrogatives, and on common and proper nouns (including vocative forms) (Ingram 2003).

Relational classifiers (§12.5.1) are never used in multiple contexts. This is hardly surprising, since their primary function is to categorize the possessive relationship rather than the noun itself.

One classifier environment can be historically older than another. In the history of Chinese, the use of classifiers with number words appears to pre-date their usage with demonstratives. Classifiers in possessive constructions in Cantonese may be considered a later development as a result of Hmong-Mien influence (Matthews 2006: 231–2). Classifiers with demonstratives in Tariana (see (23)) developed relatively recently due to Tucanoan influence as the people moved to the Vaupés River Basin linguistic area,

since this environment is absent from closely related North Arawak languages (Aikhenvald 2007).

The question of whether any synchronic functional priority can be given to just one grammatical environment is harder to answer. For the time being, there is no substantive reason to believe that the use of classifiers in contexts other than number words in isolating languages of Southeast Asia is a funny ‘parasitic’ extension of numeral classifiers.³⁰

Multiple classifier languages may appear to be superficially similar to agreement in noun classes on multiple targets illustrated in (3) from Swahili. However, noun class agreement and multiple classifier systems are fundamentally different.³¹ The main difference lies in the fact that noun class and gender agreement remain highly grammaticalized closed systems with all the properties of noun classes. These include (a) limited semantic motivation and (b) exhaustive character of noun class applicability – that every noun in the language has to be assigned to a noun class. In contrast, in multiple classifier languages, this does not have to be the case. Multiple classifiers can be realized as independent forms (as we saw above in Hmong). Noun classes never are.³² Multiple classifier systems are more open to reclassification of noun referents than noun classes. In most languages with multiple classifiers, the same noun can be used with several classifiers highlighting different features of the referent (see §12.10 and Table 12.5 there). Languages with multiple classifiers employ repeaters (this is the case in Anamuxra, East-Tucanoan, Witotoan, Arawak and Guahibo languages). Languages with noun classes never do (but see §12.2, on alliterative agreement).

That the same set of morphemes appears in a variety of classifier contexts supports the unity of classifiers in different environments as facets of the unified phenomenon of noun categorization.

12.10 Noun Categorization Devices: Their Unity and Diversity

Noun categorization devices are a versatile means towards one end – categorizing a noun in terms of recurrent semantic parameters. The differences between noun classifiers, verbal classifiers, relational and possessive classifiers and classifiers of minor types show that it would be overly simplistic to offer a binary division of noun categorization into ‘noun classes’ on the one hand and ‘classifiers’ as an umbrella term on the other.

The eight established types differ in terms of their scope and the constituents they categorize. A summary is in Table 12.3.

Differences in scope of noun categorization devices mean that having several kinds of noun categorization in one language is a plausible option.

Table 12.3 *Noun categorization devices and their scope*

Type	Scope	What is categorized
1. Noun class	Attributive NP or clause	Head noun, A/S or S/O; oblique
2. Noun classifiers	Noun	Head noun
3. Numeral classifiers	Numeral/quantifier NP	Head noun
4. Relational classifiers	Possessive NP	Possessive relationship
5. Possessive classifiers	Possessive NP	Possessed noun
6. Verbal classifiers	Clause	S/O or oblique
7. Locative classifiers	Adpositional NP	Argument marked on adposition
8. Deictic classifiers	Attributive NP	Head noun

Noun classes stand apart from other noun categorization devices in that:

- a. noun classes can be assigned based on a combination of semantic, morphological and phonological parameters or a mixture of those, while all other noun categorization devices are chosen based on semantics of the noun;
- b. every noun in a language has to be assigned to a noun class; this is not necessarily so with other types;
- c. a noun class has to be expressed on a constituent or a word outside the noun itself, as agreement marker.

Noun categorization devices vary in terms of their preferred morphological realization. Noun classes and verbal classifiers are never expressed with free lexemes. Verbal classifiers, locative and deictic classifiers never appear attached to nouns. Classifiers of any type can appear attached to an item in or outside an NP, as a suffix or a clitic.

Only numeral classifiers and classifiers in multiple environments may be expressed with repeaters.³³ In just a few instances, noun classes can be marked with partial repeaters known as ‘alliterative agreement’.

Noun classes and verbal classifiers interact with noun categories (such as number). Noun classes also interact with case and definiteness (see Amha, Chapter 26 of this volume). Classifiers in possessive NPs interact with possession types.

In terms of their origins, nouns are a typical source for any types of noun categorization. Verbs can give rise to numeral classifiers, relational and verbal classifiers. The known instances of deictic classifiers come from positional verbs. Closed word classes give rise only to noun classes, and not to other classification devices. One type of categorization device can develop into another: in many Australian prefixing languages, noun classifiers have developed into noun class prefixes (see also Reid 1997).

Semantically, all noun categorization devices are heterogenous, non-hierarchically organized systems which employ both universal and culture-specific parameters. Among universal parameters are animacy, humanness and physical properties, e.g. shape, dimensionality,

consistency. Culture-specific parameters can cover certain functional properties and social organization.

Noun categorization devices differ in their preferred semantic parameters. Animacy and humanness are predominant and de rigueur in noun classes, while noun classifiers often categorize referents in terms of their function and social status. Numeral classifiers typically categorize referents by shape – e.g. round or vertical – while verbal classifiers may also involve orientation – vertical or horizontal. Semantic parameters employed in noun categorization systems follow some tendencies. If a language has numeral or verbal classifiers for three-dimensional objects, it is likely to also have classifiers for two-dimensional ones. A summary is in Table 12.4.

Noun categorization devices used in multiple contexts (referred to as ‘multiple classifiers’) are the richest of all. They typically combine semantic features of animacy, humanness, physical properties, nature and functional properties.

The semantic complexity of an individual noun class or classifier varies. Some are semantically simple – for instance, the classifier ‘person’ in Malay and Minangkabau used with all humans. Others undergo semantic extensions and their choice is less straightforward. Consider the semantic structure of the classifier *-hon* in Japanese (Matsumoto 1993: 676–81). In its most common use, it covers saliently one-dimensional objects, e.g. long, thin, rigid objects such as sticks, canes, pencils, candles, trees, dead snakes and dried fish. It also covers martial arts contests with swords (which are long and rigid), hits in baseball, shots in basketball, Judo matches, rolls of tape, telephone calls, radio and TV programmes, letters, movies, medical injections, bananas, carrots, pants, guitars and teeth. This heterogeneity results from various processes of semantic extension and metonymy. Extensions can be based on certain rules for transferring class membership, as in Dyirbal (see §12.2 above).

Table 12.4 Preferred semantic parameters in noun categorization devices

Device	Typical semantics	Generic-specific relation
noun classes	animacy, humanness, physical properties, rarely nature or function	no
numeral classifiers	animacy, humanness, physical properties, nature, rarely functional properties	rare
noun classifiers	social status, functional properties, nature	yes
verbal classifiers	physical properties, rarely animacy, nature	yes
relational classifiers	functional properties	no
possessive classifiers	physical properties, nature, animacy, functional properties	yes
locative classifiers	physical properties, rarely animacy	no
deictic classifiers	directionality, physical properties	no

Semantic extensions of noun categorization devices can be manipulated by language planners. Following an order of King Mongkut issued in 1854 with regard to classifiers in Thai, 'noble' animals such as elephants and horses should be counted without any classifier; the classifier *tua* could only be used for animals of a 'lower' status (Juntanamalaga 1988). In Setswana, a Bantu language with a large set of noun classes, it is now considered politically incorrect to refer to ethnic minorities, such as the Chinese or the Bushmen, using noun class 5/6 (which includes inanimates); all humans have to be referred to with the 'human' class 1/2 (see Table 12.1).

Noun categorization devices are hardly ever semantically redundant. They are often used to distinguish what can be encoded with different lexemes. Anything to do with water, or a waterway can be referred to, in Tariana, with *uni* 'water, waterway'. Classifiers in multiple environments – see (23) – help differentiate a drink from a waterway, and other referents. This freedom is available for inanimates only; all animate nouns in Tariana are subsumed under an 'animate' classifier.³⁴ See Table 12.5.

In Apache, a plug, a box, a stick or a bag of tobacco are distinguished through the use of different classificatory verbs. In languages with overt noun class marking, variability in marking noun class on the same root is a way of creating new words. In Bantu languages, such as Swahili, most stems usually occur with a prefix of one class. Prefixes can be substituted to mark a characteristic of an object. *M-zee* means 'old person' and has the human class prefix *m-*. It can be replaced by *ki-* (inanimate class) to yield *ki-zee* 'scruffy old person'. In Dyrirbal, the word 'man' can be used with the feminine class marker, instead of masculine, to point out the female characteristics of a hermaphrodite. In Manambu, 'head' is usually feminine because of its round shape, but it is treated as masculine when a person has a headache, since then the head feels heavy and unusually big. The function of differentiating referents is a major feature of noun categorization devices of all types.

All noun categorization devices share discourse functions. They can be used to anaphorically refer to a previously mentioned entity, and as

Table 12.5 *Categorization of an inanimate noun uni 'water, waterway' in Tariana*

<i>uni hanu-pua</i> (big-CLF:WATERWAY)	'big river'
<i>uni pumeni-peji</i> (sweet-CLF:COLLECTIVE)	'sweet water, juice, soft drink'
<i>uni hanipa</i> (big+CLF:LARGE.SPACE)	'big, large river; large pool of water'
<i>uni hanu-kha</i> (big-CLF:CURVED)	'big, curved river'
<i>uni hanu-wani</i> (big-CLF:ABSTRACT.PLACES)	'big river (as a location)'
<i>uni hanu-nai</i> (big-CLF:LAKE)	'big, lake-like river'
<i>uni hanu-dawa</i> (big-CLF:CORNER)	'big bay in a river'
<i>uni hanu-pina</i> (big-CLF:SWAMP)	'big, swampy river'
<i>uni hanu-puna</i> (big-CLF:ROAD)	'big river (road-like) for canoe to travel'
<i>uni hanu-kwa</i> (big-CLF:FLAT.SURFACE)	'big river (with flat surface)'
<i>uni hanu-peku</i> (big-CLF:THIN.STRETCH)	'narrow stretch of a river'

referent-tracking devices. This has been described for numeral classifiers in Vietnamese (Löbel 2000; Daley 1998: 60–3), Japanese (Downing 1996: 159–91) and Korean (Lee 2014: 36–7), for noun classes in numerous Australian languages (e.g. Wardaman: Merlan 1994) and for verbal classifiers of other types (e.g. Imonda: Seiler 1985: 220, and Mescalero Apache: Rushforth 1991). Noun classifiers in Mayan languages can be used, anaphorically, in lieu of personal pronouns (see England 1983 on Mam, and Craig 1986 on Jacaltec). Similar uses have been described for many Amazonian and other languages with multiple classifier systems (e.g. Payne 2008 on Yagua, Senft 1996: 21 on Kilivila, Ingram 2003 on Anamuxra and further references in Aikhenvald 2012a).

The use of noun categorization devices may correlate with definiteness and specificity of the referent (see the discussion of Hmong in §12.9). In Tai languages and in Japanese, classifiers mark individuation (Lu 2012: 157–9; Enfield 2004: 127; Downing 1996: 243–6).³⁵ In a number of Australian languages, overt noun class marking can indicate definiteness (see Harvey 1987: 53, on Warray).

The meanings, and the uses, of classifiers and noun classes provide a unique insight into how the world is categorized through language in terms of recurrent semantic parameters involving humanness, animacy, sex, shape, form, consistency, orientation in space and the functional properties of referents. Classifiers can be culture-specific. River-dwelling peoples, such as Tariana and Baniwa of north-west Amazonia, have classifiers for canoes. Having special classifiers for fish-nets correlates with the importance of fishing in some cultures, including Nivkh. In many Oceanic languages, classifier choice correlates with value. Relational classifiers in Ponapean transparently reflect power relationships and social positions within the society (Keating 1997). Classifiers in Korean and many Southeast Asian languages reflect kinship relationships and social hierarchies. Noun categorization devices are amenable to language engineering and reflect social changes and attitudes.

The noun categorization devices identified here can be viewed as focal points on a continuum, each with its special properties yet sharing numerous features. The existence of multiple classifier systems offers further evidence in favour of noun categorization as a unified phenomenon.

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Notes

1. This chapter is an updated synthesis of the typology of noun categorisation in Aikhenvald (2000, 2004a, 2004b, 2006). A comprehensive bibliography on the issue is in Aikhenvald (2015). Our analysis here is inductively based and involves a careful study of grammars of about 700 languages from different areas of the world. My statements concerning the relative frequency of each type are necessarily constrained by our current knowledge of the world's languages.

Previous approaches and a history of study of noun categorization devices are in Aikhenvald (2000: 5–12), and also Kilarski (2013). The term ‘classifier’ has come to be used in different ways in different traditions. As mentioned in Chapter 1 (Introduction), ‘classifiers’ in Athabaskan linguistics are effectively voice markers. Verbal classifiers – attested in some Northern Athabaskan languages (see also §12.6 here) – are referred to as ‘genders’ (see also Rice and de Reuse, Chapter 23 of this volume). ‘Classifiers’ in some Australianist studies are means of classifying verbs (see also Aikhenvald 2000: 9–10). Verbal action classifiers (also called ‘verbal classifiers’) in a number of Tibeto-Burman and Southeast Asian languages occur with number words and categorize the action in terms of its frequency, time duration and manner (e.g. Bhaskararao and Joshi 1985: 18, on Newari; Zhang 2013: 408–44 on Ersu; Haas 1942: 205 on Thai). In a number of Africanist studies (see, for instance, Dimmendaal 2000), the term ‘noun class’ refers to classification of nouns depending on the type of plural marker they take.

A vaguely defined idea of ‘classifier language’ as a special language type in a number of previous studies (e.g. Beckwith 1998 and Tang 2004) is based on two assumptions: (a) that classifiers are limited to numeral classifiers and (b) that numeral classifiers occur almost exclusively in languages of isolating profile. Neither assumption is borne out by the facts.

2. See Smith-Stark (1974), and also Corbett (2000) on animacy and number marking; Dixon (1994: 85) and references there on the Nominal Hierarchy; and further examples in Appendix 1 in Aikhenvald (2000). Markers of noun categorization devices are underlined throughout the chapter.
3. Typological features of genders and noun classes and the history of terms can be found in Aikhenvald (2012b; 2004a; 2000: 18–80); and also Corbett (1991, 2014).
4. See Foley (1991: 119–64) on Yimas, Nekitel (1986) on Abu’ Arapesh and an overview of Arapesh languages in Dobrin (2012: 84–109). Alliterative agreement has also been described as one of the agreement techniques for a number of varieties of Bainounk, a West Atlantic language (Quint forthcoming; Cobbinah 2010).

5. Along similar lines, generic-specific noun combinations in Burmese and in Lao are a subtype of a broader class of compound nouns and are not fully productive (Vittrant 2002 and Enfield 2004). An analogy between generic noun classifiers and generics in Egyptian and other Ancient scripts is addressed by Goldwasser (2006).
6. See Lee (2014), Bugaeva (1979), Sohn (1994). The order is: Number word-Classifier-Noun or Noun-Number word-Classifier-Noun.
7. See Downing (1996) on classifiers in Japanese; Vittrant (2002) and Pe (1965) on Burmese; Beckwith (1998) on Uzbek (Turkic); Krishnamurti (2002) on Dravidian; Kölver (1982a, b) on Chinese and Indic; Emeneau (1956) on Indic; and Mithun (1999: 104-7) and Conathan (2004) on North American Indian languages. A summary of numeral classifiers in Amazonian languages is in Aikhenvald (2012a: 286-8). See Klamer (2014) on numeral classifiers in Teiwa, a Papuan language, and a survey of numeral classifiers in Papuan languages of New Guinea in Aikhenvald (2000: 123-4). See Guérin, chapter 29 of this volume, and also Bender and Beller (2006) on Oceanic languages, Himmelmann (2005: 173) on Western Austronesian languages, and Tang (2004), Teng (2008), Li (2006) and Pan (2013: 348-9) on Formosan languages. Numeral classifiers have been described for some Philippine languages, e.g., Northern Subanen (Daguman 2014: 87-8). The few languages in Africa for which numeral classifiers have been described include Kana and other Kegboid languages (Cross River, Benue-Congo) (see Ikoro 1994), Northern Toussian, a Gur language from Burkina Faso (Zaugg-Coretti 2005, and a few South Mande languages (Erman 2005), Kla-Dan (Makeeva 2012: 60-1), and Dan-Gwæeta (Vydrin 2014). Anindilyakwa is the only Australian language with numeral classifiers (possibly due to the lack of dedicated number words in Australian languages). Gil (2013) contains misleading information on the distribution and properties of numeral classifiers and is to be treated with extreme caution.
8. See Mithun (1999: 106) on Nootka; Gerdtts and Hinkson (2004) on Halkomelem; Robins (1958: 86-92) on Yurok; Aikhenvald (2012a) on Warekena and Bahuna; Poser (2005) on Carrier, and Gruzdeva (2004) on Nivkh. The only known instance of numeral classifiers attached to a noun (and not to a number word), are Kegboid languages, from the Cross-River group of the Benue-Congo grouping in Nigeria (Ikoro 1994). This reflects their origin in erstwhile noun classes typical for Benue-Congo languages in general.
9. See Nguyen (1957: 131-2) on Vietnamese; Pe (1965: 181) on Burmese; on a similar phenomenon in Tai languages, see Conklin (1981: 364).
10. See Zubin and Shimojo (1993) and Aikhenvald (2000: 334-6) on the complexity of the notion 'general classifier'.

11. See Adams (1989; 1992: 107, 113, 119–20) and Daley (1998: 18–19) on Vietnamese, other Austroasiatic languages and Mon-Khmer; Bradley (2001) and Zhang (2014) on kinship-based numeral classifiers in Tibeto-Burman.
12. See also Lehrer (1986).
13. Further, language-internal differences between numeral classifiers and quantifying expressions are addressed in Aikhenvald (2000: 118–20); see also Löbel (2000: 287) on Vietnamese.
14. Discussion and further examples are in Aikhenvald (2006: 11–12), Heine (1997: 5, 39).
15. See Rodrigues (1997), Aikhenvald (2000, 2012a: 433) and Ribeiro (2002: 77, 86) for a system similar to relational classifiers in Kipeá-Kariri, an extinct Macro-Jê language.
16. Similar systems of possessive classifiers have been described for numerous Carib languages. See Aikhenvald (2012c: 290–2), Koehn (1994) on Apalaí and Payne and Payne (2012: 82–6) on Panare. Possessive classifiers are sometimes called ‘genitive classifiers’.
17. Similar examples from Cantonese are in Pacioni (1997) and from Amazonian languages in Aikhenvald (2006: 26; 2007).
18. See Carter 1976, Krauss 1968, Conathan 2004, Mithun 1999, Rice 1989 and Rice and de Reuse, Chapter 23 of this volume; a summary of classificatory verbs in Tibeto-Burman languages in Zhang (2013), Frank (1990) on Ika and Malone (2004) on Chimila; Blankenship (1997) and Kilarski (2009) on Cherokee, Mithun (1999: 106–19) on verbal classifiers and classificatory verbs in North American Indian languages, and Peterson (2008) on verbal classifiers in Kuki-Chin (Tibeto-Burman).
19. See Lang (1975) on Enga, Franklin (1981) on Enga and Kewa, Merlan, Roberts and Rumsey (1997) on Ku Waru.
20. See Fortescue (2006) on Wakashan languages, Poser (2005), Krauss (1968), Rice and de Reuse (Chapter 23 of this volume) on Athabaskan, Frank (1990) on Ika and Malone (2004) on Chimila.
21. Pace Grinevald (2000: 68); see further discussion in Aikhenvald (2000: 149–83).
22. See Brown (1981) on Waris; see Thompson (1993) on classificatory verbs and affixed verbal classifiers in Koyokon Athabaskan.
23. See Blankenship (1997), Mithun (1986, 1999: 111–12; Chapter 24 of this volume) on the development of classificatory verbs in Iroquoian languages.
24. See Aikhenvald (2012a: 294–6) for a summary; Derbyshire (1999) on Carib languages; Pet (1987: 37–8) on Lokono.
25. See Rankin (2004: 206) and references there.
26. See Vidal (1997) on Pilagá, Klein (1979) on Toba and Céria and Sândalo (1995) for a reconstruction of positional deictics in Proto-Guaycuruan.

27. Further possible types of noun categorization devices may include interrogative classifiers (Poser 2005) and 'modifier' classifiers distinct from classifiers in multiple contexts in Lao and Thai (Enfield 2004; 2007: 138–53).
28. See Aikhenvald and Green (2011: 433) on Palikur. Further examples of different possibilities of categorizing one noun with a numeral classifier and with several sets of classificatory verbs in Chimila, a Chibchan language, are in Malone (2004: 182–4). Carrier, a Northern Athabaskan language, has twelve means of classifying a noun's referent in different contexts. Different semantic categories are reflected in numerals, interrogative quantifiers, verbal classifiers as prefixes to verbs, classificatory verbs of three types (controlled handling, uncontrolled handling, location and motion), objects of postpositions, relativisers and so on (Poser 2005). This is perhaps the richest system of types of noun categorization in one language documented so far. See further examples in Aikhenvald (2000: 183–202).
29. This is a feature of a number of languages from Southeast Asia, including Kam-Tai languages such as Zhuang and Maonan (Gerner 2006; Lu 2012), and Hmong (Hmong-Mien) (Bisang 1993; Jarkey 2015), Newar (Tibeto-Burman: see Hyslop 2007–8), a number of Arawak, Tucanoan, Witoto, Bora, Yagua and Guahibo languages of Amazonia (Aikhenvald 2007; 2012a: 295–8; Michael 2008: 332; Mihas, Chapter 25 of this volume), and a number of languages in the New Guinea area, including Kilivila, an Oceanic language (Senft 1996), and Papuan languages Anamuxra (Ingram 2003), Awará and Wantoat (Quigley 2002; Davis n.d.). In the last two languages, classifiers are prefixed to number words and appear as independent phonological words in other contexts. In Cantonese, a Sinitic language, classifiers are used with numerals and in quantifying expressions, with demonstratives, with a limited class of 'size' adjectives and in possessive constructions. While classifiers are obligatory with numerals and in quantifying expressions and with demonstratives, they appear to be optional in other contexts where their presence or absence correlates with the specificity of the referent (see Pacioni 1997; Aikhenvald 2000: 204–41).
30. This assumption appears in some sources on classifiers in Southeast Asian languages, e.g. Conklin (1981: 186); see a survey and criticism in Lu (2012).
31. Contrary to Seifart (2004) and Grinevald and Seifart (2004) who confuse closed grammatical systems of noun classes and multiple classifier systems with a different principle of organization. Weber (2002) analyses multiple classifiers in Bora, an Amazonian language, as bound nouns.
32. Noun class agreement typically conforms to a number of principles, including the Agreement Hierarchy (Corbett 1991: 226; Aikhenvald

- 2000: 39). This is not the case for multiple classifiers where agreement is always semantic.
33. The only exception appears to be Truquese (Benton 1968) where repeaters are also employed as possessive classifiers.
34. A similar example from Burmese comes from Becker (1975: 113).
35. Some of these are mentioned by Contini-Morava and Kilarski (2013).

References

- Adams, K. L. 1989. *Systems of numeral classification in the Mon-Khmer, Nicobarese and Aslian subfamilies of Austroasiatic*. Canberra: Pacific Linguistics.
1992. A comparison of the numeral classification of humans in Mon-Khmer. *Mon Khmer Studies* 21: 107–29.
- Ahland, Colleen Anne. 2012. A grammar of northern and southern Gumuz. PhD dissertation, University of Oregon.
- Aikhenvald, Alexandra Y. 2000. *Classifiers: A typology of noun categorisation devices*. Oxford University Press.
- 2004a. Gender. In Geert E. Booij, Christian Lehmann, Joachim Mugdan and Stavros Skopetas (eds.), *Morphology: A handbook on inflection and word formation [Morfologie: Ein Handbuch zur Flexion und Wortbildung]*, Article 98, pp. 1031–45, 2 Halbband. Berlin and New York: Mouton de Gruyter.
- 2004b. Nominal classification: Towards a comprehensive typology. *Nominal classification. Special issue of Sprachtypologie und Universalienforschung* (ed. Alexandra Y. Aikhenvald) 57(2/3): 105–16.
- Aikhenvald, Alexandra Y. 2006. Classifiers and noun classes: Semantics. In Keith Brown (ed.), *Encyclopedia of language and linguistics*, 2nd edn, Vol. I, Article 1111, pp. 463–70. Elsevier: Oxford.
2007. Classifiers in multiple environments: Baniwa of Içana/Kurripako: A North Arawak perspective. *International Journal of American Linguistics* 27: 475–500.
2010. Gender, noun class and language obsolescence: The case of Paumarí. In E. B. Carlin and Simon van de Kerke (eds.), *Linguistics and archeology in the Americas*, pp. 236–52. Leiden: Brill.
- 2012a. *Languages of the Amazon*. Oxford University Press.
- 2012b. Round women and long men: Shape and size in gender choice in Papua New Guinea and beyond. *Anthropological Linguistics* 54(1): 33–86.
- 2012c. Possession and ownership in a typological perspective. In Alexandra Y. Aikhenvald and R. M. W. Dixon (eds.), *Possession and ownership: A cross-linguistic typology*, pp. 1–64. Oxford University Press.
2015. *Oxford bibliography online: Classifiers* (refereed updateable resource with summaries and evaluation for each entry), ed. (general) Mark Aronoff. New York: Oxford University Press.

- Aikhenvald, Alexandra Y. and R. M. W. Dixon. 2011. Dependencies between grammatical systems. In Alexandra Y. Aikhenvald and R. M. W. Dixon (eds.), *Language at large: Essays on syntax and semantics*, pp. 170–204. Leiden: Brill.
- Aikhenvald, Alexandra Y. and Diana Green. 2011. Palikur and the typology of classifiers. In Alexandra Y. Aikhenvald and R. M. W. Dixon (eds.), *Language at large: Essays in syntax and semantics*, pp. 394–450. Leiden: Brill.
- Becker, A. J. 1975. A linguistic image of nature: The Burmese numerative classifier system. *Linguistics* 165: 109–21.
- Beckwith, C. I. 1998. Noun specification and classification in Uzbek. *Anthropological Linguistics* 40: 124–40.
- Bender, Andrea and Sieghard Beller. 2006. Numeral classifiers and counting systems in Polynesian and Micronesian languages: Common roots and cultural adaptations. *Oceanic Linguistics* 45: 380–403.
- Benton, R. A. 1968. Numeral and attributive classifiers in Truquese. *Oceanic Linguistics* 7: 104–46.
- Berlin, B. 1968. *Tzeltal numeral classifiers: A study in ethnographic semantics*. The Hague: Mouton.
- Bhaskararao, P. and S. K. Joshi. 1985. A study of Newari classifiers. *Bulletin of the Deccan College Research Institute* 44: 17–31.
- Bisang, W. 1993. Classifiers, quantifiers and class nouns in Hmong. *Studies in Language* 17: 1–51.
2002. Classification and the evolution of grammatical structures: A universal perspective. *Sprachtypologie und Universalienforschung* 55: 289–308.
- Blankenship, B. 1997. Classificatory verbs in Cherokee. *Anthropological Linguistics* 39: 92–110.
- Boas, F. and E. Deloria. 1941. *Dakota grammar*. Washington, DC: US Government Printing Office.
- Bolaños, Katarina. Forthcoming. A grammar of Kakua. PhD thesis, MPI Leipzig.
- Borneto, Carlo Serra. 1996. Liegen and stehen in German: A study in horizontality and verticality. In E. Casad (ed.), *Cognitive linguistics in the Redwoods: The expansion of a new paradigm in linguistics*, pp. 459–506. Berlin: Mouton de Gruyter.
- Bradley, David. 2001. Counting the family: Family group classifiers in Yi (Tibeto-Burman) languages. *Anthropological Linguistics* 43: 1–17.
- Braun, Friederike and Geoffrey Haig. 2010. Where are German ‘girls’ feminine? How the semantics of age influences the grammar of gender agreement. In Markus Bieswanger, Heiko Motschenbacher and Susanne Mühleisen (eds.), *Language in its socio-cultural context: New explorations in gendered, global and media uses*, pp. 68–84. Frankfurt am Main: Peter Lang.

- Brown, R. 1981. Semantic aspects of some Waris predications. In K. J. Franklin (ed.), *Syntax and semantics in Papua New Guinea languages*, pp. 93–123. Ukarumpa: Summer Institute of Linguistics.
- Bugaeva, T. G. 1979. Numerativy v korejskom jazyke [Numeratives in Korean]. *Issledovanija v oblasti etimologii altajskikh jazykov*, pp. 206–55. Leningrad: Nauka.
- Carpenter, K. 1987. How children learn to classify nouns in Thai. PhD thesis, Stanford University.
- Carter, R. M. 1976. Chipewyan classificatory verbs. *International Journal of American Linguistics* 42(1): 24–30.
- Céria, V. G. and F. Sândalo. 1995. A preliminary reconstruction of Proto-Waikurúan with special reference to pronominals and demonstratives. *Anthropological Linguistics* 37: 169–91.
- Cinque, Guglielmo and Iliyana Krapova. 2007. A note on Bulgarian numeral classifiers. *Pitar Moş – a Building with a view: Papers in honour of Alexandra Cornilescu*, pp. 45–51. Bucharest: Editura Universităţii din Bucureşti.
- Claudi, U. 1985. *Zur Entstehung von Genussystemen*. Hamburg: Buske.
- Cobbinah, Alexander. 2010. The Casamance as an area of intense language contact: The case of Bainouk Gubaher. *Journal of Language Contact* 3: 175–201.
- Conathan, Lisa. 2004. Classifiers in Yurok, Wiyot, and Algonquin. *Berkeley Linguistics Society* 30: 22–33.
- Conklin, N. F. 1981. The semantics and syntax in numeral classification in Tai and Austronesian. PhD thesis, University of Michigan.
- Contini-Morava, Ellen and Marcin Kilarski. 2013. Functions of nominal classification. *Language Sciences* 40: 263–99.
- Corbett, Greville G. 1991. *Gender*. Cambridge University Press.
2000. *Number*. Cambridge University Press.
2014. Gender typology. In Greville G. Corbett (ed.), *The expression of gender*, pp. 87–130. Berlin: Mouton de Gruyter.
- Craig, C. G. 1986. Jacalteco noun classifiers. *Lingua* 70: 241–84.
- Daguman, Josephine. 2014. *A grammar of Northern Subanen*. Munich: Lincom Europa.
- Daley, Karen Ann. 1998. *Vietnamese classifiers in narrative texts*. Dallas, TX: Summer Institute of Linguistics; University of Texas at Arlington.
- Davis, D. R. n.d. Noun class markers in Wantoat. Ukarumpa: Summer Institute of Linguistics.
- De Leon, Maria de Lourdes Pasquel. 1987. Noun and numeral classifiers in Mixtec and Tzotzil: A referential view. PhD thesis, University of Sussex.
- Denny, J. P. 1976. What are noun classifiers good for? *Papers from the Annual Regional Meeting of the Chicago Linguistic Society* 12: 122–32.
1979. Semantic analysis of selected Japanese numeral classifiers for units. *Linguistics* 17: 317–35.

- Derbyshire, Desmond C. 1999. Carib. In R. M. W. Dixon and Alexandra Y. Aikhenvald (eds.), *The Amazonian languages*, pp. 23–64. Cambridge University Press.
- Dimmendaal, Gerrit J. 2000. Number marking and noun categorization in Nilo-Saharan languages. *Anthropological Linguistics* 42: 214–61.
- Dixon R. M. W. 1972. *The Dyirbal language of North Queensland*. Cambridge University Press.
1977. *A grammar of Yidiny*. Cambridge University Press.
1982. *Where have all the adjectives gone? And other essays in semantics and syntax*. Berlin: Mouton.
1988. *A grammar of Boumaa Fijian*. University of Chicago Press.
1994. *Ergativity*. Cambridge University Press.
2002. *Australian languages: Their nature and development*. Cambridge University Press.
2010. *Basic linguistic theory, Vol. II. Grammatical topics*. Oxford University Press.
2015. *Edible gender, mother-in-law language and other grammatical wonders*. Oxford University Press.
- Dobrin, Lise M. 2012. *Concreteness in grammar: The noun class systems of the Arapesh languages*. (Stanford Studies in Morphology and the Lexicon). Stanford: CSLI Publications.
- Downing, Pamela A. 1986. The anaphoric use of classifiers in Japanese. In C. G. Craig (ed.), *Noun classes and categorisation: Proceedings of a symposium on Categorisation and Noun Classification, Eugene, Oregon, October 1983*, pp. 345–75. Amsterdam: John Benjamins.
1996. *Numeral classifier systems: The case of Japanese*. Amsterdam: John Benjamins.
- Drapeau, Lynn and Renée Lambert-Brétière. 2011. Verbal classifiers in Innu. *Anthropological Linguistics* 53: 293–322.
- Emeneau, M. B. 1956. India as a linguistic area. *Language* 32: 3–16.
- Enfield, N. J. 2004. Nominal classification in Lao: A sketch. *Nominal classification. Special issue of Sprachtypologie und Universalienforschung* (ed. Alexandra Y. Aikhenvald) 57(2/3): 117–43.
2007. *A grammar of Lao*. Berlin: Mouton de Gruyter.
- England, N. 1983. *A grammar of Mam, a Mayan language*. Austin: University of Texas Press.
- Erman, Anna. 2005. Le formant -gā dans la langue dan-blo au cours de grammaticalisation. *Mandenkan* 41: 1–21.
- Foley, W. A. 1991. *The Yimas language of New Guinea*. Stanford University Press.
- Fortescue, Michael. 2006. The origins of the Wakashan classificatory verbs of location and handling. *Anthropological Linguistics* 48: 266–87.
- Frank, P. 1990. *Ika syntax*. (Studies in the Languages of Colombia 1). Dallas, TX: Summer Institute of Linguistics; University of Texas at Arlington.

- Franklin, K. 1981. Existential and pro-verbs in Kewa. In K. J. Franklin (ed.), *Syntax and semantics in Papua New Guinea Languages*, pp.151–72. Ukarumpa: Summer Institute of Linguistics.
- Gabas Júnior, Nilson. 1999. A grammar of Karo, Tupí (Brazil). PhD dissertation, University of California, Santa Barbara.
- Geraghty, Paul. 2000. Possession in the Fijian languages. *Sprachtypologie und Universalienforschung* 53(3/4): 243–50.
- Gerds, Donna and Mercedes Q. Hinkson. 2004. Salish numeral classifiers: A lexical means to a grammatical end. *Nominal classification. Special issue of Sprachtypologie und Universalienforschung* (ed. Alexandra Y. Aikhenvald) 57(2/3): 247–79.
- Gerner, Matthias. 2006. Noun classifiers in Kam and Chinese Kam-Tai languages: Their morphosyntax, semantics and history. *Journal of Chinese Linguistics* 34: 237–305.
- Gil, David. 2013. Numeral classifiers. In Matthew S. Dryer and Martin Haspelmath (eds.), *The world atlas of language structures online*. Leipzig: Max Planck Institute for Evolutionary Anthropology. Available online at: <http://wals.info/chapter/55> [Accessed on 02.12.14].
- Goldwasser, Orly. 2006. A comparison between classifier languages and classifier script: The case of Ancient Egyptian. In Gideon Goldenberg (ed.), *A festschrift for Hans Jakob Polotsky*, pp. 16–39. Jerusalem: Magnes Press.
- Greenberg, J. H. 1972. Numeral classifiers and substantival number: Problems in the genesis type. *Working Papers in Language Universals*; 9: 1–39. Reprinted in J. H. Greenberg, *On language: Selected writings of Joseph H. Greenberg*, ed. Keith Denning and Suzanne Kemmer, pp. 166–93. Stanford University Press, 1990..
1978. How does language acquire gender markers. In J. H. Greenberg, C. A. Ferguson and E. A. Moravcsik (eds.), *Universals of human languages, Vol. III: Word structure*, pp.241–70. Stanford University Press.
- Grinevald, Colette. 2000. A morphosyntactic typology of classifiers. In Gunter Senft (ed.), *Systems of nominal classification*, pp. 50–92. Cambridge University Press.
- Grinevald, Colette and Frank Seifart. 2004. Noun classes in African and Amazonian languages: Towards a comparison. *Linguistic Typology* 8: 243–85.
- Gruzdeva, Ekaterina. 2004. Classifiers in Nivkh. *Nominal classification. Special issue of Sprachtypologie und Universalienforschung* (ed. Alexandra Y. Aikhenvald) 57(2/3): 300–29.
- Haas, Mary R. 1942. The use of numeral classifier in Thai. *Language* 18: 201–5.
- Harvey, M. 1987. The Warray language from Adelaide River. MA thesis, Australian National University.

1992. The Gaagudju people and their language. PhD thesis, University of Sydney.
- Heine, Bernd. 1982. African noun class systems. In H. Seiler and C. Lehmann (eds.), *Apprehension: Das sprachliche Erfassen von Gegenständen. Teil I: Bereich und Ordnung der Phänomene*, pp. 189–216. Tübingen: Gunter Narr.
1997. *Possession: Cognitive sources, forces and grammaticalization*. Cambridge University Press.
- Himmelmann, Nikolaus P. 2005. The Austronesian languages of Asia and Madagascar: Typological characteristics. In Alexander Adelaar and Nikolaus P. Himmelmann (eds.), *The Austronesian languages of Asia and Madagascar*, pp. 111–81. London: Routledge.
- Hori, Hirofumi. 2000. Classifiers in Skidegate Haida. In Osahito Miyaoka and Fubito Endo (eds.), *Languages of the North Pacific Rim*, Vol. VI, pp. 141–55. Faculty of Informatics, Osaka Gakuin University, Suita, Japan.
- Hyslop, Catriona. 2001. *The Lolovoli dialect of the North-east Ambae language, Vanuatu*. Canberra: Pacific Linguistics.
- Hyslop, Gwendolyn. 2007–8. Newar classifiers: A summary of the literature. *Journal of Newar Studies*, No. 6, NS 1128: 1–20.
- Ikoru, S. M. 1994. Numeral classifiers in Kana. *Journal of African Language and Linguistics* 15: 7–28.
1996. *The Kana language*. University of Leiden.
- Ingram, Andrew. 2003. The morphosyntax of numeral classifiers in Anamuxra: details of a multiple classifier system. *Anthropological Linguistics* 45: 129–68.
- Jaisser, A. 1987. Hmong classifiers. *Linguistics of The Tibeto-Burman Area* 10(2): 169–75.
- Jarkey, Nerida. 2015. *Serial verbs in White Hmong*. Leiden: Brill.
- Jun, W. and Z. Guoqiao. 1993. *An outline grammar of Mulao*. Canberra: National Thai Studies Centre, Australian National University.
- Juntanamalaga, P. 1988. Social issues in Thai classifier usage. *Language Sciences* 10: 313–30.
- Keating, Elizabeth. 1997. Honorific possession: Power and language in Pohnpei, Micronesia. *Language in Society* 26: 247–68.
- Kilarski, Marcin. 2009. Cherokee classificatory verbs: Their place in the study of American Indian languages. *Historiographia Linguistica* 36: 39–73.
2013. *Nominal classification: A history of its study from the classical period to the present*. Amsterdam: John Benjamins.
- Klamer, Marian. 2014. The history of numeral classifiers in Teiwa (Papuan). In Anne Storch and Gerrit J. Dimmendaal (eds.), *Number-constructions and semantics: Case studies from Africa, Amazonia, India and Oceania*, pp. 135–66. Amsterdam: John Benjamins.
- Klein, H. E. M. 1979. Noun classifiers in Toba. In Mathiot (ed.), pp. 85–95.

- Koehn, S. 1994. The use of generic terms in Apalaí genitive constructions. *Revista Latinoamericana de Estudios Etnolingüísticos* 8: 39–48.
- Kölver, U. 1982a. Klassifikatorkonstruktionen in Thai, Vietnamesisch und Chinesisch. In Seiler and Lehmann (eds.), pp. 160–85.
- 1982b. Interaktion von nominalen Kategorien am Beispiel der Entwicklung des modernen Bengali. In Seiler and Lehmann (eds.), pp. 244–51.
- Krauss, M. 1968. Noun classification systems in Athabascan, Eyak, Tlingit and Haida Verbs. *International Journal of American Linguistics* 34(3): 194–203.
- Krishnamurti, Bh. 2002. *Dravidian languages*. Cambridge University Press.
- Lang, Adrienne. 1975. *The semantics of classificatory verbs in Enga and other Papua New Guinea languages*. Canberra: Pacific Linguistics.
- Lee, Yunseok. 2014. *Classifiers in Korean*. Munich: Lincom Europa.
- Lehrer, Adrienne. 1986. English classifier constructions. *Lingua* 68: 109–48.
- Li, Paul Jen-kuei. 2006. Numerals in Formosan languages. *Oceanic Linguistics* 45: 133–52.
- Lichtenberk, Frantisek. 1983. Relational Classifiers. *Lingua* 60: 147–76.
- Löbel, E. 2000. Classifiers vs. genders and noun classes: A case study in Vietnamese. In B. Unterbeck (ed.), *Gender in grammar and cognition: Proceedings of the workshop on Gender*, pp. 259–319. Berlin: Mouton de Gruyter.
- Lu, Tian-Qiao. 2012. *Classifiers in Kam-Tai languages: A cognitive and cultural perspective*. Boca Raton: Universal Publishers.
- Makeeva, N. V. 2012. Grammaticheskij stroj jazyka kla-dan v tipologicheskome kontekste rodstvennykh jazykov [The grammatical organization of Kla-Dan in the typological context of related languages]. PhD dissertation, Institute of Linguistics RAN, Moscow.
- Malone, Terry. 2004. Classifiers in Chimila (Chibchan). *Nominal classification. Special issue of Sprachtypologie und Universalienforschung* (ed. Alexandra Y. Aikhenvald) 57(2/3): 144–201.
- Marnita, R. 1996. Classifiers in Minangkabau. MA thesis, Australian National University.
- Martins, S. A. 1994. Análise da morfosintaxe da língua Dâw (Makú-Kamã) e sua classificação tipológica. MA thesis, Universidade Federal de Santa Catarina, Florianópolis.
- Mathiot, M. (ed.). 1979. *Ethnology: Boas, Sapir and Whorf revisited*. The Hague: Mouton.
- Matsumoto, Y. 1993. Japanese numeral classifiers: A study on semantic categories and lexical organisation. *Linguistics* 31: 667–713.
- Matthews, Stephen. 2006. Cantonese grammar in areal perspective. In Alexandra Y. Aikhenvald and R. M. W. Dixon (eds.), *Grammars in contact: A cross-linguistic typology*, pp. 220–36. Oxford University Press.
- Merlan, F. 1994. *A grammar of Wardaman: A language of the Northern Territory of Australia*. (Mouton Grammar Library 11). Berlin: Mouton de Gruyter.

- Merlan, F., S. P. Roberts and A. Rumsey. 1997. New Guinea 'classificatory verbs' and Australian noun classification: A typological comparison. In M. Harvey and N. Reid (eds.), *Nominal classification in Aboriginal Australia*, pp. 63–103. Amsterdam: John Benjamins.
- Michael, Lev D. 2008. Nanti evidential practice: Language, knowledge, and social action in an Amazonian society. PhD dissertation, University of Texas at Austin.
- Mithun, Marianne. 1984. The evolution of noun incorporation. *Language* 60: 847–94.
1986. The convergence of noun classification systems. In C. G. Craig (ed.), *Noun classes and categorisation: Proceedings of a symposium on Categorisation and Noun Classification, Eugene, Oregon, October 1983*, pp. 379–98. (Typological Studies in Language 7. Amsterdam: John Benjamins.
1999. *The languages of Native North America*. Cambridge University Press.
- Nekitel, O. 1986. A sketch of nominal concord in Abu' (an Arapesh language). In *Papers in New Guinea Linguistics No. 24*, pp. 177–205. Canberra: Pacific Linguistics.
- Newman, Paul. 2000. *The Hausa language: An encyclopedic reference grammar*. New Haven: Yale University Press.
- Nguyen, D. H. 1957. Classifiers in Vietnamese. *Word* 13: 124–52.
- Nomoto, Hiroki. 2013. Number in classifier languages. PhD dissertation, University of Minnesota.
- Pacioni, P. 1997. Possessive constructions, classifiers and plurality in Cantonese and some other Chinese dialects. In T. Hayasi and P. Bhaskararao (eds.), *A report of the Joint Research Project: Analysis and description of individual languages and linguistic typology*, pp. 199–222. Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa.
- Pan, Chia-jung. 2013. A grammar of Lha'alhua, an Austronesian language from Taiwan. PhD thesis, James Cook University.
- Payne, Doris L. 2008. Do classifiers function as pronouns in Yagua? In Marisa Malvestitti, Cristina Messineo and Roberto Bein (eds.), *Estudios en lingüística y antropología. Homenaje a Ana Gerzenstein de colegas y discípulos por sus tres décadas de contribución a las investigaciones de las lenguas indígenas en la Argentina*, pp. 181–9. Buenos Aires: Instituto de Lingüística, Facultad de Filosofía y Letras, University of Buenos Aires.
- Payne, Thomas E. and Doris L. Payne. 2012. *A typological grammar of Panare, a Cariban language of Venezuela*. Leiden: Brill.
- Pe, H. 1965. A re-examination of Burmese classifiers. *Lingua* 15: 163–86.
- Pensalfini, R. 2003. *A grammar of Jingulu, an Aboriginal language of the Northern Territory*. Canberra: Pacific Linguistics.
- Pet, W. J. A. 1987. Lokono Dian, the Arawak language of Suriname: a grammatical sketch of its grammatical structure and lexicon. PhD thesis, Cornell University.

- Peterson, David. 2008. Bangladesh Khumi verbal classifiers and Kuki-Chin 'chiming'. *Linguistics of the Tibeto-Burman area* 31(1): 109–38.
- Poser, William J. 2005. Noun classification in Carrier. *Anthropological Linguistics* 47: 143–68.
- Quigley, Susan R. 2002. *Awara grammar essentials*. Ms. Ukarumpa: Summer Institute of Linguistics.
- Quint, Nicolas. Forthcoming. Le système des classes nominales en nyun de Djifanghor.
- Rankin, Robert L. 2004. The history and development of Siouan positionals with special attention to polygrammaticalization in Dhegiha. *Nominal classification. Special issue of Sprachtypologie und Universalienforschung* (ed. Alexandra Y. Aikhenvald) 57(2/3): 202–27.
- Rehg, K. (with D. C. Sohl) 1981. *Ponapean reference grammar*. Honolulu: University of Hawaii Press.
- Reid, N. 1997. Class and classifier in Ngan'gityemerri. In M. Harvey and N. Reid (eds.), *Nominal classification in Aboriginal Australia*, pp. 165–228. Amsterdam: John Benjamins.
- Ribeiro, Eduardo Rivail. 2002. O marcador de posse alienável em Kariri. Um morfema Macto-Jê revisitado. *LIAMES* 2: 31–48.
- Rice, K. 1989. *A grammar of Slave*. Berlin: Mouton de Gruyter.
- Robins, Robert H. 1958. *The Yurok language: Grammar, texts, lexicon*. (University of California Publications in Linguistics, 15). Berkeley and Los Angeles: University of California Press.
- Rodrigues, Aryon D. 1997. Nominal classification in Kariri. *Opción* 13: 65–79.
- Rushforth, S. 1991. Uses of Bearlake and Mescalero (Athapaskan) classificatory verbs. *International Journal of American Linguistics* 57: 251–66.
- Saul, J. E. and N. F. Wilson. 1980. *Nung grammar*. Dallas, TX: Summer Institute of Linguistics; University of Texas at Arlington.
- Schaub, W. 1985. *Babungo*. Croom Helm Descriptive Grammars. London: Croom Helm.
- Schembri, Adam. 2003. Rethinking 'classifiers' in signed languages. In Karen Emmorey (ed.), *Perspectives on classifier constructions in sign languages*, pp. 3–34. London: Lawrence Erlbaum.
- Schokkin, Dineke. 2014. A grammar of Paluai, the language of Baluan island, Manus Province. PhD thesis, James Cook University.
- Seifart, Frank. 2004. Nominal classification in Miraña, a Witotoan language of Colombia. *Nominal classification. Special issue of Sprachtypologie und Universalienforschung* (ed. Alexandra Y. Aikhenvald) 57(2/3): 228–46.
- Seiler, W. 1985 *Imonda, a Papuan language*. Canberra: Australian National University, Pacific Linguistics.
1986. Noun-classificatory verbal prefixes as reanalysed serial verbs. *Lingua* 68: 189–206.

- Seiler, H. and C. Lehmann (eds.). 1982. *Apprehension: Das sprachliche Erfassen von Gegenständen. Teil I: Bereich und Ordnung der Phänomene*. Tübingen: Gunter Narr.
- Senft, Gunter. 1996. *Classificatory particles in Kilivila*. New York: Oxford University Press.
- Smith-Stark, S. 1974. The plurality split. *Papers from the Annual Regional Meeting of the Chicago Linguistic Society* 10: 657-71.
- Sohn, Ho-min. 1994. *Korean*. London: Routledge.
- Spitulnik, D. 1989. Levels of semantic restructuring in Bantu noun classification. In P. Newman and R. D. Botne (eds.), *Current approaches to African linguistics*, Vol. V, pp. 207-20. Dordrecht: Foris.
- Stebbins, Tonya N. 2005. Nominal classification in Mali. *Anthropological Linguistics* 47: 77-131.
- Tang, Chih-Chen Jane. 2004. Two types of classifier languages: A typological study of classification markers in Paiwan noun phrases. *Language and Linguistics* 5: 377-407.
- Teng, Stacey Fang-Ching. 2008. *A reference grammar of Puyuma: An Austronesian language of Taiwan*. Canberra: Pacific Linguistics.
- Thompson, C. 1993. The areal prefix hu- in Koyukon Athabaskan. *International Journal of American Linguistics* 59(3): 315-33.
- Vidal, Alejandra. 1997. Noun classification in Pilagá (Guaykuruan). *Journal of Amazonian Languages* 1: 60-111.
- Vittrant, Alice. 2002. Classifier systems and noun categorization devices in Burmese. *Berkeley Linguistics Society* 28: 129-48.
- Vydrin, Valentin. 2014. Quantifiers in Dan-Gwɛɛta (South Mande). Ms.
- Wajananat, S. 1979. Classifiers in Mal Thin. *Mon-Khmer Studies* 8: 295-303.
- Walsh, M. 1997. Nominal classification and generics in Murrihpatha. In M. Harvey and N. Reed (eds.), *Nominal classification in Aboriginal Australia*, pp. 255-92. Amsterdam: John Benjamins.
- Weber, David J. 2002. The structural status of Bora classifiers. *Work Papers of the SIL*, University of North Dakota, session 46.
- Welmers, Wm. E. 1973. *African language structures*. Berkeley: University of California Press.
- Zaugg-Coretti, Silvia. 2005. Le syntagme nominal en toussian du nord (langue voltaïque du Burkina Faso). Lizensiatsarbeit der philosophischen Fakultät der Universität Zürich.
- Zeshan, Ulrike. 2003. 'Classificatory' constructions in Indo-Pakistani sign language: Grammaticalization and lexicalization processes. In Karen Emmorey (ed.), *Perspectives on classifier constructions in sign language*, pp. 113-42. Mahwah, NJ: Laurence Erlbaum.
- Zhang, Sihong. 2013. A reference grammar of Ersu, a Tibeto-Burman language from China. PhD thesis, James Cook University.
2014. Numeral classifiers in Ersu. *Language and Linguistics* 15: 883-915.
- Zubin, D. and K. M. Köpcke. 1986. Gender and folk taxonomy: The indexical relation between grammatical and lexical

categorisation. In C. G. Craig (ed.), *Noun classes and categorisation*, pp. 139–80. Amsterdam: John Benjamins.

Zubin, D. and M. Shimojo. 1993. How ‘general’ are general classifiers? with special reference to *ko* and *tsu* in Japanese. In J. S. Guenter, B. A. Kaiser and C. C. Zoll (eds.), *Proceedings of the Nineteenth Annual Meeting of the Berkeley Linguistics Society*, pp. 490–502. Berkeley Linguistics Society.

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