5. The genesis of grammar: on combining nouns

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Abstract

That it is possible to propose a reconstruction of how grammar evolved in human languages is argued for by Heine and Kuteva (2007). Using observations made within the framework of grammaticalization theory, these authors hypothesize that time-stable entities denoting concrete referential concepts, commonly referred to as 'nouns', must have been among the first items distinguished by early humans in linguistic discourse. Based on crosslinguistic findings on grammatical change, this chapter presents a scenario of how nouns may have contributed to introducing linguistic complexity in language evolution.

5.0 Introduction

In Heine and Kuteva (2007), a scenario of grammatical evolution is proposed, leading from lexical to functional forms and structures. Applying grammaticalization theory as a tool for reconstructing the rise and development of grammatical forms and constructions, these authors argue that generalizations about grammatical change in modern languages can be extended to the reconstruction of early language evolution by extrapolating from the known to the unknown, and they conclude that this evolution can be described in terms of six stages or layers, as summarized in table 5.1.

The goal of the present chapter is to look at one specific issue arising from the conclusions reached in that work: We will be concerned with what may happen when there is only one type of word and the only way of expressing new concepts is by combining different tokens of this type. To narrow down the scope of this problem, discussion is restricted to stage I and to one specific combination, namely that of two nouns. Our choice of nouns is deliberate: On the basis of the reconstructions listed in table 5.1, nouns, or noun-like time-stable referential entities are hypothesized to have been the first linguistic entities to have arisen. The question to be looked into in this chapter is what one can do with nouns, more specifically with combining two nouns, and what people in the past may have achieved by doing so.

Table 5.1: Layers of grammatical evolution (Heine and Kuteva, 2007).

Layer	*New categories introduced*	*Hypothesized main grammatical innovations*
I	Nouns	One-word utterances
II	Verbs	Mono-clausal propositions
III	Adjectives, adverbs	Head-dependent structures
IV	Demonstratives, adpositions, aspect markers, negation	Elaboration of phrase structures
V	Pronouns, definite (and indefinite) markers, relative clause markers, complementizers, case markers, tense markers	Temporal and spatial displacement, the beginning of clause subordination
VI	Agreement markers, passive markers, adverbial clause subordinators	Obligatory expressions, elaborated clause subordination

5.1 Types of combining

In order for new grammatical categories to arise there is one necessary requirement: There have to be at least two different linguistic forms that are combined. Most, if not all, languages have productive patterns of combining two nouns, A and B – be that in the form of compounding, of attributive possession, or of any other morphosyntactic or pragmatic construction. Underlying these patterns there appear to be semantic strategies giving rise to at least four different types of combining. These types are illustrated in (1) with examples from English compounding; as we will see below, compounding is not the only way in which nouns can be combined.

(1) English compounds

Type of combining		Example
a	Modifying	*apple tree*
b	Additive	*whisky-soda*
c	Appositive	*poet-doctor*
d	Alternative	*egg head*

We will now briefly look in turn into the main distinguishing properties of these four types of combining.

Modifying. In this type of combining, illustrated in (1a), A is a modifier of B, that is, [A - B] is a specific kind of B or, alternatively, A delimits the kind of referents that B stands for – in other words, the resulting C is more specific in meaning than B. Thus, in the compound *apple tree*, *apple* modifies *tree*, and

an *apple tree* is a kind/type of tree. Modifying combining has been described as being endocentric and involving a modifier-head structure; thus, in the compound *apple tree, apple* is the modifier (A) and *tree* its head or hypernym (B); similarly, in the Korean compound *nwun-mwul* (eye-water) 'tears', *nwun* is the modifier and *mwul* the head (Sohn 1994: 416). Rather than a modifier-head, modifying compounds may have e.g. an argument-predicate structure, as in *truck driver* (object verb). Modifying combinations differ from some other kinds of combining in that A and B tend to have different argument status (e.g., different case markings). In the literature on compounding, modifying combinations, also called subordinating compounds or sub-compounds, determinative compounds, or referred to by the Sanskrit word *tatpurusha***,** are assumed to be worldwide the predominant type of compounds.

Additive. Additive combining consists of two (or more) parts expressing "natural coordination" of semantically closely associated concepts that are expected to co-occur, as in Korean *son-pal* (hand-foot) 'hand and foot', Mordvin *t'et'a.t-ava.t* (father.PL-mother.PL) 'parents', Tagalog *araw-gabi* 'day and night', Tibetan *srab-mthuŋ* (thin-thick) 'density'; Khalkha *xaluun xüjten* (heat cold) 'temperature', and the two members A and B represent referentially distinct units (see Wälchli 2005 for detailed discussion). Thus, the compound *whisky-soda* consists of two separate entities, *whisky* and *soda*. The meaning of additive combinations is taxonomically superordinate in respect to its parts A and B. Nevertheless, it need not, and frequently is not, restricted to A and B but may include other items of the same class as A and B. In the Trans-New Guinea language Sentani, pigs and dogs are prominent domestic animals and the word for 'animal' is *obo-joku* (pig-dog), which is not restricted to these two kinds of animals. Similarly, the compound KNIFE-FORK in American Sign Language (ASL) means 'silverware', that is, it is not restricted to knives and forks;[1] in fact, generalizing coordination of this kind constitutes crosslinguistically the most widespread sub-type of additive compounding (Wälchli 2005: 80). But the meaning of an additive compound can also be more specific than that of its members; the compound *haṛam-buṛia* ('old man-old woman') 'old couple' of the Austroasiatic Munda language Mundari, for example, is restricted to one specific sub-set of old men and women (Sinha, s.a.: 112-4). In works on compounding, additives are also referred to as co-compounds or – somewhat misleadingly[2] – by the Sanskrit word *dvandva*; they are particularly common in easternmost Europe, Asia, and New Guinea (Wälchli 2005: 8, 19-20).

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[1] Note that English *silverware* is not restricted to items made of silver (Fritz Newmeyer, p.c.).

[2] The Sanskrit term *dvandva* is derived from *dvamm̨-dva* (two.two) 'pair', which is not an additive (or co-compound) but a word reduplication (Wälchli 2005: 17).

Appositive. The two members A and B are referentially not distinct but intersective, where each one limits the meaning of the other: A *poet-doctor* is conceived as both a poet and a doctor, but not any kind of a poet and not any kind of a doctor, a *servant girl* is one individual who is both a servant and a girl, and *King Richard* is both a king and a person named Richard, but he is not any king nor any person named Richard – in other words, A and B represent different facets of the resulting unit C, which is taxonomically subordinate, or hyponymic, to its parts A and B (Bauer 1978: 68; Wälchli 2005: 161).[3] Unlike in modifying combinations, in appositive ones the two members have the same participant status, receiving, e.g., the same case marking. In the literature on compounding, the Sanskrit term *karmadharaya* tends to be used for appositive combinations.

Alternative. The meaning of an alternative combination C is largely or entirely independent, or "outside" of that of A and B, it cannot be derived literally from the latter. An *egg head* is neither an egg nor a head, nor a combination of eggs and heads, and the compound *yún-yǔ* (cloud-rain) 'sexual intercourse' of Mandarin Chinese or *giăng-hoa* (moon-flower) 'flirtation, ephemeral love' of Vietnamese (Wälchli 2005: 150) bear little direct resemblance to their respective components A or B. The grammatical form of an alternative construction can frequently not be derived from its constituents or their combination. Thus, a *must-have* is not a verb but a noun, and while *egg head* is a noun, it does not show morphological agreement with *head* (e.g., *The egg head blew *its nose*; Bauer 1978: 13). Alternative combinations frequently derive from metonymic or metaphorical processes whose non-figurative origin may no longer be transparent. The Sanskrit term *bahuvrihi* used for alternative compounds, which are also called indirect compounds, is itself an alternative compound: *bahu-vrihi* (much-rice) means 'rich person' – a person who owns a lot of rice. But there need not be metonymic or metaphorical processes involved. In the homesign variety of Nicaragua, homesigns for 'fruits' are a sequence where preparation of the fruit for eating is followed by the sign EAT, as in (2).

(2) Fruit names in the homesign community of Nicaragua (Morford 2002: 333)

PEEL EAT	'banana'
RUB-ON-SHIRT EAT	'apple'
SLICE-OFF-TOP-WITH-MACHETE EAT	'pineapple'

Underlying the process leading to noun combining there appear to be specific goals of creating novel concepts by combining existing forms in new

[3] Appositives thus contrast with additives in that there is no natural semantic relationship between A and B, and C is taxonomically subordinate in respect to A and B.

ways. These goals have to do e.g. with sub-classifying existing concepts (modifying combining), conflating two concepts into a new one having properties of both (appositive combining), coordinating two concepts (additive combining), or creating entirely new concepts (alternative combining).

Such new concepts may arise in many different ways, e.g. via technological innovations, e.g., when German speakers drew on the compound *Fahrrad* (ride wheel) to designate bicycles or *Kraftfahrzeug* (power.ride.thing) to designate cars, or via new environmental stimuli, e.g. when German speakers created the modifying compound *Waldsterben* (forest.dying). Or they may result from the replication of models of combining found in other languages, e.g., when speakers of some European languages drew on alternative combining to form equivalents of the English term *skyscraper*, cf. German *Wolkenkratzer* (lit.: 'clouds scratcher'), French *gratte-ciel* ('scratch-sky'), etc.

While compounding is the grammatical domain which is most commonly associated with this process, it is not the only one. For example, appositive combining is crosslinguistically more likely to involve appositional constructions than compounding, as in the following English example containing two instances of appositive noun phrase combining: *I don't know Newman the actor, but I do know Newman the linguist*. Additive combining in English is typically expressed by means of the linking element *and*, e.g. *kith-and-kin*, but it may as well involve simple juxtaposition, that is compounds, as in expressions for drinks *(vodka-Martini, whisky-soda*) or joint ventures (*Rank-Xerox, Shell-BP, Daimler-Chrysler*).

Combining nouns appears to be a fundamental human activity. It surfaces in language use on the one hand in the form of conventionalized or fossilized words or phrases; on the other hand it is present in the form of a productive strategy used to constantly create new concepts. The evidence available suggests there is a fairly unidirectional process from latter to the former, whereby new combinations of nouns constantly emerge for the expression of novel concepts, and where some of these combinations end up as conventional grammatical constructions or as unanalyzable lexicalized expressions.

In the following sections we will be concerned with some manifestations of this process, in accordance with the basic question that is the subject of this paper, namely what one can do when combining two nouns. This is a wide field and we will therefore need to impose a number of restrictions on our treatment. One such restriction concerns the number of nouns to be combined: Especially in additive combining, more than two nouns may be involved, as in example (3): In American Sign Language there is a type of additives (co-compounds) which may consist of three to four signs for basic-level concepts strung

together (optionally followed by a sign for 'etc.') in order to form superordinate-level concepts.

(3) Additive compounds in American Sign Language (Wälchli 2005: 19-20)
a APPLE-ORANGE-BANANA-ETC. 'fruit'
b BEANS-CARROTS-CORN-ETC. 'vegetable'
c RING-BRACELET-NECKLACE-EARRINGS-ETC. 'jewelry'

But perhaps more importantly, noun combining need not be but frequently is recursive, where one noun is embedded in another noun which again is embedded in yet another noun. The magnitude of productivity that modifying noun combining may have can be illustrated with example (4), involving German compounding. We have never heard any German speaker uttering this compound, and it probably never will be uttered; still, (4) is a grammatically correct instance of productive recursive compounding.

(4) German
Auto- bahn- rast- platz- toiletten- reinigungs- personal- bedarf-
car- line- rest- place- toilette- cleaning- staff- need-

abstell- schrank- schlüssel- dienst- telefon- nummer
storing- locker- key- service- phone- number
'the phone number of the key service for lockers of the cleaning staff of public conveniences of rest places of highways'

In much of this chapter, however, we will be concerned only with combinations of two nouns.

Another restriction concerns the different types of combining that we discussed above: Wherever possible we will confine discussion to only one of these types, namely modifying combining. In English and other Germanic languages, this is the prevalent type of combining, but this is not necessarily the situation to be found in many other languages.

5.2 Compounding

The question that we are concerned with in this section is how the combining of to nouns or noun phrases may lead to compounding. Definitions of compounding have either a morphological or a semantic nucleus. In the former case, a compound tends to be defined simply as a word (or free morpheme or lexeme) that consists of more than one word, while in semantically based definitions it is proposed that a compound has a meaning that is not the same as the sum total of its constituent words. Neither of these definitions is really

unproblematic; still, we are satisfied in assuming that a given expression qualifies as a compound if it corresponds to both kinds of definitions.

Compounding is sometimes not easy to delimit, in that the boundary between compounding and possessive constructions may be gradual. In Koyraboro Senni, a Nilo-Saharan language of West Africa, for example, there is a distinction between tight and loose compounds; in the former, the initial and the final constituents form a composite noun stem, while in the latter the two constituents can independently have definite and plural marking and "are not reliably distinguishable from possessives" Heath (1999b: 107). Similar problems exist with the boundary between compounding and derivation: In modifying compounds, high-frequency heads may have properties of derivational elements, and for some of them an analysis in terms of derivation seems to be preferable; we will return to this issue below.

While not being the only kind of noun-noun combining, compounding constitutes the process most commonly associated with noun-noun combining. The English examples that we provided in (1) illustrate the four major types of noun-noun compounds to be found in the languages of the world, and table 5.2 summarizes salient properties of these types. Note, however, that this does not conclude the types of compounds that have been distinguished; mention should be made specifically of incorporating compounds, where a noun is incorporated into a verbal root (e.g. *backstabbing*, *breastfeeding*). This is not really a common phenomenon in English; but in some other languages incorporating compounds are highly productive. Compounding may be right-headed, as in English, or left-headed, as in Vietnamese.

Table 5.2: Distinguishing semantic properties of noun-noun compounds (A, B = members of a compound, C = meaning of the compound; corresponding Sanskrit terms in parentheses).

Modifying (*tatpurusha*) (1a)	Appositive (*karmadharaya*) (1b)	Additive (*dvandva*) (1c)	Alternative (*bahuvrihi*, "possessives") (1d)
A is a modifier of B	A and B are both kinds of C. C is one referent consisting of the intersection of A and B	A + B = C, where A and B are distinct referents	C is neither A nor B, nor A + B. As in (1a) there is a head-modifier structure, but the meaning of C is external to the structure A + B

From noun combining to compounding

All evidence available suggests that noun-noun compounding typically arises via a process whereby free, referential nouns are combined in accordance with established conjoining patterns of the language concerned. This process tends to be referred to as condensation, which starts with loose combinations that are gradually transformed into tighter ones. And it is by and large a unidirectional process: The development from morphosyntactically loose combinings of nouns to tight compounds forming phonologically and semantically one single word is ubiquitous, while a development in the opposite direction is fairly rare.

One common strategy of combining – one that is available in some form or other in most languages – can be seen in attributive possession ("genitive constructions"), where specific attributive head-modifier combinations of free nouns turn into regularly used noun-noun compounds (e.g. [B'*s* A]). This is the process that can be held responsible crosslinguistically for many instances of modifying compounds but it is not confined to this type of compounds.

A second established conjoining strategy consists of coordination (i.e., [A *and* B], typically though not necessarily involving some linking device, such as the conjunction *and* in English (*kit- and-kin*). Coordination is crosslinguistically the main source of additive compounds (Wälchli 2005: 250), but it may as well give rise to alternative compounds, cf. English *bread-and-butter*.

The third major strategy of forming noun-noun compounds is provided by simple juxtaposition. Juxtaposition can be ad hoc, but more commonly it follows structural templates as they exist for apposition or for linking contrastive discourse functions such as presenting given vs. new, or less specific vs. more specific information. Juxtaposition is the paradigm strategy for creating appositive compounds.

Evidence for the hypothesis that noun-noun compounding has its origin in the combination of independent nouns is of the following kind. First, in a number of languages, modifying compounds exhibit morphosyntactic relics of possessive constructions. One such relic can be seen in case morphologies. Quite a number of German compounds contain the genitive case suffix *-s* (GEN) whose presence is hard to account for unless one assumes that the diachronic source of the compound is a modifier-head construction of attributive possession. This relic[4] is not restricted to modifying compounds (5a), it is in the same way found in alternative compounds, cf. (5b). Such

[4] These German segments inserted between two parts of a compound are not always morphosyntactic relics. For example, *Geburtstag* (birth.day) has a feminine modifier noun *Geburt* 'birth', but feminine nouns do not take the genitive suffix *-s* (Fritz Newmeyer, p.c.).

possessive case markers may still be functional, but they may as well have been lost, surviving only in compounds. In Swedish, the genitive case ending *-s* also appears in compounds, e.g., *bord-s-ben* (table-GEN-leg) 'table leg', but there is also an older genitive form that is no longer used but has survived in compounds, e.g., *kyrko-gård* (church.GEN-yard) 'churchyard' (Dahl 2004: 225).

(5) German

a	Kalb.s.braten	(veal.GEN.roast)	'roast veal'
	Schwein.s.leder	(pig.GEN.leather)	'pigskin'
b	Esel.s.brücke	(donkey.GEN.bridge)	'dog's ear'
	Kind.s.kopf	(child.GEN.head)	'silly ass'

Additive compounds may bear witness of their origin in coordinating constructions in relics of linking elements: In some languages there are also fossilized comitative markers, additive focus particles, or verbal sequence markers, suggesting that additive compounds (or co-compounds) developed from coordination or similar constructions (Wälchli 2005: 249). Using such relics as evidence, it has been possible to demonstrate that in the transition from (Early) Vedic to Sanskrit, additive compounds developed from coordination (Wälchli 2005: 17, 247).

Another kind of relic consists of word order properties, in that a compound may exhibit a type of word order that can only be explained with reference to its possessive genesis (Wälchli 2005: 246ff.).

A second piece of evidence comes from historical observations: In a number of instances it is possible to establish that a given compound cannot be traced back to earlier phases of the history of the languages concerned while the nouns making up the compound can. Thus, the English alternative compound *skyscraper* presumably did not exist prior to the appearance of the relevant buildings whereas its constituents were there earlier as independent words. Even in languages for which we have no historical records it is possible to show that independent nouns were combined into compounds, while a process in the opposite direction does not seem to occur. For example, in the Niger-Congo language Ewe of Ghana and Togo there is a wide range of compounds which must have arisen after Ewe speakers came into contact with European civilization, e.g., *ga-ŋkúí* (metal-eye.is.it) 'spectacles', *ga-sɔ́* (metal-horse) 'bicycle', or *ga-mɔ́* (metal-way) 'railway', while the constituents of these compounds, *ga* 'metal', *ŋkú* 'eye', *sɔ́* 'horse', and *mɔ́* 'way', already existed as independent nouns prior to this contact situation.

But perhaps the main piece of evidence comes from synchrony: In many

languages, compounding forms a productive process, where independent nouns can be combined creatively into new nouns expressing new meanings. Accordingly, we constantly witness how new compounds arise and evolve. This process can be observed in actual language use, in that novel compounds are emerging all the time. Conversely, a process whereby compounds regularly develop into simple nouns is uncommon. To be sure, it may happen that in the course of time some specific compound may be lexicalized to the extent that it is no longer conceived as a compound and is reinterpreted as a simple noun. But even in such cases, the earlier development was one where independent nouns were combined into compounds.

The process leading to compounding is first and above an instance of lexicalization, whereby new lexemes are formed. But it can also be interpreted as a manifestation of grammaticalization, in that it leads to more grammatical forms and constructions and involves a process that is largely unidirectional. For example, when combinations of nouns turn into modifying compounds, this involves the following grammaticalization parameters (see Heine and Kuteva, 2007: section 1.2):

Extension: The use of a noun is extended to one specific context – that is, in combination with some other noun, and in this context its meaning may be modified.

Desemanticization: The modifying noun loses in referential and semantic properties. Furthermore, the compound acquires a meaning that is either more specific or entirely different than the combined meanings of the constituents.

Decategorialization: The modifying noun loses seminal nominal properties – it may not be modified or receive affixes such as plural markers, thus turning into an invariable form.

Erosion: The two nouns tend to lose their individual stress or intonation patterns, taking a pattern that is characteristic of single nouns. Furthermore, one or both of the constituents may lose in phonetic autonomy, merging with or being assimilated to the other constituent. For example, the English noun *man* occurs commonly as a head of modifying compounds, e.g., *businessman, draughtsman, Dutchman, fisherman, foreman, hitman, policeman, postman, salesman,* or *spokesman*, and in some of these combinations it differs from the lexical noun *man* in showing a reduced vowel [mən].[5]

[5] Fritz Newmeyer (p.c.) draws our attention to the fact that intonation in English compounds is complex. For example, for most American speakers (maybe British as well) it is APPLE cake, but apple PIE, or MAPLE Street, but Maple ROAD.

5.3 Noun modification

As we saw above, a paradigm case of noun combining is provided by modifying compounds. But this is not the only way in which noun combining may lead to modification. An alternative way can be seen in the rise of a structure where the two nouns remain distinct words but one assumes the function of a modifier, typically that of an adjectival modifier. Crosslinguistically, there are specific conceptual domains, such as sex, plants or plant parts, and metals, that tend to provide the source for a development whereby a combination [noun-noun] gives rise to a modifying combination [noun-adjectival modifier], in that one of the nouns gradually acquires properties of a modifier of the other noun.

Nouns typically denote tangible and/or visible things that refer, while adjectives denote qualities relating to such conceptual domains as dimension ('large', 'small'), age ('old', 'young'), color ('green'), or value ('good', 'bad'). In many languages a diachronic process can be observed whereby specific groups of nouns are grammaticalized to adjectives, such groups concerning nouns stereotypically associated with some specific quality. Thus, we find in English names of flowers such as *orange* or *pink*, or metal names such as *bronze, brass,* or *silver* that have been grammaticalized to adjectivals. Another group of nouns widely grammaticalized to adjectivals concerns sex-specific human items such as 'man' and 'woman' or 'father' and 'mother', which in many languages are recruited to express distinctions in sex. Thus, in the Swahili examples of (6), the nouns *mwana(m)ume* 'man' and *mwanamke* 'woman' are restricted in their meaning to denoting the qualities 'male' and 'female', respectively, and they occur in the syntactic slot reserved for adjectives, namely after the noun they modify, and they agree in number with their head noun.

(6) Swahili (Bantu, Niger-Congo)

kijana	mwana(m)ume	'boy'
youth		man
kijana	mwanamke	'girl'
youth		woman

This process involves on the one hand the parameter of desemanticization, whereby the nominal meaning is bleached out except for some salient property, referring to the color or sex of the item concerned. On the other hand it involves decategorialization, in that nouns in such uses lose in morphosyntactic properties characteristic of nouns, such as taking modifiers, determiners, and inflections and occurring in all the contexts commonly associated with nouns.

To conclude, there is a diachronic process to be observed crosslinguistically whereby adjectival modifiers can emerge as a result of the grammaticalization of noun-noun combinations and, in accordance with our extrapolation procedure, we hypothesize that such a process may also have taken place in early language evolution.

5.4 Derivation and inflection

We argued in section 5.2 that the combining of free nouns can lead to compounding. But compounding is not necessarily the end of development: Nouns serving as heads in modifying compounds may gradually lose in nominal properties and acquire the properties of derivational forms. The following example illustrates the way this may happen. The English nouns *style* and *fashion* have attained some currency in their use as heads of modifying compounds; Bauer and Renouf (2001: 106-7) found examples such as *Turkey-style, windmill-style, bunting-style*, or *frog-fashion* in his text collection, and he observes that in such combining formations, *-style* and, somewhat less, *-fashion* are grammaticalizing to affix-like heads, acquiring a grammatical function paraphrasable as 'in the manner of an X'.

We do not know whether English *-style* or *-fashion* will develop further into productive functional categories, but this example shows how the process begins: The head of a modifying compound is used productively in contexts where its nominal meaning is backgrounded and a schematic function is foregrounded. This process is not restricted to compounding in spoken languages, it is also found in signed languages. In American Sign Language the noun for INDIVIDUAL (or PERSON) is juxtaposed to another word to create a compound structure, and this structure has acquired properties of derivation, where INDIVIDUAL assumes the function AGENT, that is, that of an agent noun marker (Sexton, 1999: 118-21). The modifying member of the compound is either a noun (7a) or a verb (7b):

(7) American Sign Language (Sexton 1999: 118-21)

a	ROCKET	+	AGENT	'astronaut'
b	SERVE	+	AGENT	'waiter or waitress'

That this is a gradual process affecting different compounds in different ways is suggested by the fact that the compound structure differs from one instance to another in its degree of decategorialization on the way from compounding to derivation. For example, whereas 'astronaut' and 'waiter/waitress' show no signs of decategorialization, being simply juxtaposed, others, such as 'teacher' (< TEACH + AGENT), are suggestive of cliticization. But this example also exhibits another possible outcome of compounding:

Rather than becoming a productive grammatical form, the head noun can merge with its modifier to become a new, unanalyzable noun. This appears to have happened in ASL with the compound [STUDY + AGENT], which has merged almost completely into a single lexical noun meaning 'student'.

Many languages have gone further than English or ASL in developing modifying noun-noun compounds into new functional categories of derivation. We will now look at a number of such languages to determine the nature of this process.

Ewe. The first language to be considered is Ewe, a Niger-Congo language spoken in southern Togo and southeastern Ghana. There is a highly productive pattern of modifying noun-noun compounds, and like in English, the head follows its modifier. The Ewe noun *tɔ́* 'father, owner, master' is used regularly for a range of functions[6] when used as the head noun in modifying compounds: It is used fairly productively to denote an owner or a person having the properties described by the first constituent, or a member of a nationality or nation, as the examples in (8) show.

(8) The Ewe noun *tɔ́* 'father, owner, master' as the head of compounds.

Form	*Meaning*	*First component*
agble-tɔ́	'farm owner'	agble 'field, farm'
fe-tɔ́	'creditor, debtor'	fe 'debt'
aƒé-tɔ́	'house master'	aƒé 'homestead'
Eʋe-tɔ́	'Ewe person'	Eʋe 'Ewe (people)'
Dzáma-tɔ́	'German person'	Dzáma 'German (people)'

tɔ́ is the traditional word for 'father' in Ewe (in modern Ewe it has been replaced by *fofó*), but it is not the only kinship term that exhibits a regular compounding pattern; the examples in (9) show that the noun *nɔ* 'mother' does so, too: As the head of modifying noun-noun compounds it denotes in specific contexts a person who 'is subject to, is ruled by, or suffers from' (Westermann 1930: 173). Unlike *tɔ́*, however, it is not really productive.

[6] The following is an example of the uses this noun has outside compounds: *xɔ sia tɔ́* (house this owner) 'the owner of this house'.

(9) The Ewe noun nɔ 'mother' as the head of compounds.

Form	*Meaning*	*First component*
dɔ-nɔ	'sick person'	dɔ 'sickness'
ŋkú-nɔ	'blind person, he who has bad eyes'	ŋkú 'eye'
kpó-nɔ	'hunchback'	kpó 'hunch'
tókú-nɔ	'deaf man'	tó 'ear', kú 'die'

In addition, there is a third noun, vi´ 'child (of)',[7] that has acquired uses as a derivational suffix as the head in noun-noun compounds, denoting a 'young X', where 'X' stands for the category of animate nouns, cf. (10).

(10) The Ewe noun vi´ 'child' as the head of compounds.

Form	*Meaning*	*First component*
ŋútsu-ví	'boy'	ŋútsu 'man'
yevú-ví	'young European'	yevú 'European'
nyi-ví	'calf'	nyi 'cow'
detí-ví	'young oilpalm tree'	detí 'oilpalm tree'

More than the other two nouns, vi´ (*-ví* as a suffix) has turned into a full-fledged derivational suffix and, in fact, it belongs to the most productive derivational suffixes of Ewe: In addition to denoting animates that are not yet grown up, as in (10), it has a range of grammatical functions, which have been described in detail in Heine, Claudi and Hünnemeyer (1991: 79-97). Most of all, it is a diminutive suffix with inanimate count nouns, used literally (11a) or in a metaphorically or otherwise transferred sense (11b). Other salient functions are: When the first constituent is a non-count noun denoting an abstract or mass concept, *-ví* tends to express a delineated part of that concept (11c), and when it stands for some socio-cultural or political unit, *-ví* denotes members of that unit (11d).[8]

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[7] There are two nouns for 'child' in Ewe, where one, ɖ*evi*, is non-relational (e.g., when I say *I see a child*) while vi´ is relational (e.g., *my own child*). It is exclusively the latter that is used in compounds.

[8] In this respect, *-ví* resembles *-tɔ́* (see above); still, the two nevertheless differ in meaning, see Heine, Claudi and Hünnemeyer (1991: 85).

(11) The Ewe noun vi´ 'child' as the head of compounds.

	Form	*Meaning*	*First component*
a	kpé-ví	'small stone'	kpé 'stone'
	du-ví	'small village'	du 'small village'
b	afɔ-ví	'toe'	afɔ 'foot, leg'
	ŋkú-ví	'pupil'	ŋkú 'eye'
c	súkli-ví	'a piece of sugar, sugar cube'	súkli 'sugar'
	núnono-ví	'a mouthful of liquid'	núnono 'drinking'
d	dume-ví	'a native of a village'	du(me) 'village'
	Eʋe-ví	'an Ewe person'	Eʋe 'Ewe (people)'

Like *-tɔ́* and *-nɔ*, *-ví* also occurs in lexicalized uses, that is, in mono-morphemic units; the Ewe noun *xeví* 'bird', for example, can be interpreted reasonably only as one morpheme, even if the non-compounded item *xe* is occasionally used, referring to 'less typical, domestic birds' like chicken and ducks, i.e., vertebrates with wings that live on the ground and do not normally fly – thereby suggesting to speakers that *xeví* is (at least historically) composed of two distinct nouns.

These examples show that there is a process from compounding to derivation in this language: Ewe speakers have exploited the vocabulary of nuclear kinship relations, i.e., 'father', 'mother', and 'child (of)', for developing derivational suffixes out of modifying noun-noun compounds, even if this process has not attained any productivity in the case of *nɔ*, which has given rise to largely lexicalized new words. This is a canonical process of grammaticalization, as can be shown most clearly for *-ví*: (a) The use of the head noun 'child' has been extended productively to new ranges of contexts (i.e., modifying nouns) with which it was previously incompatible (extension), (b) it has been desemanticized e.g. to a diminutive marker with inanimate count nouns (desemanticization), (c) it has lost its autonomy as an independent noun and is now a derivational affix (decategorialization), and (d) it has also undergone erosion, in that the low-high contour tone characterizing the noun *vi´* has been reduced to a high tone (*-ví*) in the suffix.

!Xun. That the situation found in Ewe is by no means unusual can be demonstrated by looking at another African language that is neither genetically nor areally related to Ewe. This language is !Xun,[9] a Khoisan language spoken in Namibia, Angola, and Botswana. Like in Ewe, there is a highly productive

[9] The following data are taken from the W2 dialect of !Xun, spoken in and around Ekoka near the border of Namibia and Angola.

pattern of modifying noun-noun compounds with the same order modifier-head.

In this language, the noun *kx'àò* means 'parent or relative of a higher generation' or 'owner', but as the head in endocentric modifying compounds it productively serves as a derivational suffix to form agentive nouns, denoting more specifically 'someone who does the action described excessively and/or habitually', cf. (12). Note that it combines with verbs rather than nouns.

(12) The !Xun noun *kx'àò* 'owner' as the head of compounds.

Form	*Meaning*	*First component*
còè-kxˈàò	'nurse'	còè 'to treat (a sick person)'
cú-kxˈàò	'someone who likes to sleep constantly'	cú 'to lie down (of one person)'
ḿ-kxˈàò	'someone who eats a lot'	ḿ 'to eat', 'food'
tcˈà-kxˈàò	'thief'	tcˈà 'to steal'
ǁáúlè-kxˈàò	'hunter'	ǁáúlè 'to hunt'

Furthermore, the !Xun noun g//ǒ*q*, plural *n//àē* 'man' is also used productively as the head in compounds, denoting male referents (13a), but it also occurs with some plant names, cf. (13b).

(13) The !Xun noun g//ǒ*q* (plural *n//àē* 'man' as the head of compounds.

	Form	*Meaning*	*First component*
a	dàbà- gǁǒ*q*	'male child'	dàbà 'child'
	!xō- gǁǒ*q*	'male elephant'	!xō 'elephant'
	!xō-nǁàē	'male elephants'	!xō 'elephant'
b	gǁxˈā-gǁǒ*q*	'manketti tree which does not bear fruit'	gǁxˈā 'manketti tree (*Ricinodendron rautanenii*)

In a similar fashion, the item *dē*, an etymological reflex of the reconstructed Proto-!Xun noun **de* 'mother', serving as the head in modifying compounds, has assumed the function of a derivational suffix denoting female referents. It is productive with nouns for humans and animals (14a), to some extent also for plants (14b).

(14) The !Xun noun dē 'mother' as the head of compounds.

	Form	*Meaning*	*First component*
a	dàbà-dē	'female child'	dàbà 'child'
	!xō-dē	'female elephant'	!xō 'elephant'
	gùmí-dē	'cows'	gùmí 'cattle'
b	g‖xˈā-dē	'manketti tree bearing fruit'	g‖xˈā 'manketti tree' (*Ricinodendron rautanenii*)

Like in Ewe, there are two nouns for 'child' in !Xun, where *dàbà* 'child (in general)' is non-relational and *mà*, plural *m̀hè* 'child of, offspring', is relational (e.g., *mí mà* 'my [own] child'); and like in Ewe, it is the latter that is commonly used as a head noun in endocentric compounds, cf. (15a), and when the first constituent denotes an inanimate concept, it is used productively as a diminutive suffix (15b) which can be added to virtually any noun.

(15) The !Xun noun mà (plural m̀hè) 'child' as the head of compounds.

	Form	*Meaning*	*First component*
a	g‖òq-mà	'boy'	g‖òq 'man'
	!xō-mà	'young or small elephant'	!xō 'elephant'
b	tcˈāō-mà	'small tooth'	tcˈāō 'tooth'
	n!āō-mà	'small house'	n!āō 'house'

Discussion

The two languages examined, Ewe and !Xun, are genetically unrelated and are spoken in different parts of Africa, Ewe being a West African Niger-Congo language and !Xun a Khoisan language of southwestern Africa. Still, there are striking similarities in the way certain noun-noun compounds are formed. First, in both languages the head of the compound is placed last (both languages have the syntactic order modifier-head, or possessor-possessee). Second, both have a productive pattern of noun-noun compounding. Third, both languages use the lexicon of nuclear family relations productively as heads to express concepts of other domains of human experience. In this way, nouns for 'father', 'mother', '(own) child' and related concepts are combined with other nouns to express new concepts. Fourth, on account of their frequent occurrence, the use of these nouns is generalized to the extent that they are on the borderline between compounding and derivation.

Fifth, in some cases the head noun merges with the preceding noun to form a new, unanalyzable lexical item. For example, we observed above that the Ewe noun *xeví* 'bird' is composed of the earlier word for 'bird' *xe* plus the relational noun *vi´* 'child', but synchronically it is unanalyzable, despite the fact that *xe* survives with the restricted meaning 'domestic bird'. Roughly the same process has occurred in !Xun, where the earlier word for 'bird' *tcǀám* has now the meaning 'domestic bird(s)' or 'poultry' while the new word for 'bird' is *tcǀámmà*, which is composed of *tcǀám* plus *mà* 'child of', but is conceived of as a mono-morphemic lexeme.

Sixth, there is a similarity concerning the fate of some of the head nouns concerned. When regularly used as a head of compounds, the relevant noun may become increasingly restricted to uses as productive markers of compounds, gradually losing its status as an independent lexical item. Thus, Ewe *tɔ́* 'father' has given way to another noun, *fofó*, and the !Xun noun *dē* 'mother' has survived only in compounds and a few fixed expressions (though in northern dialects it still exists as an independent lexical item; cf. *mī dé* 'my mother', *ā dé* 'your mother' in the !Xun dialects of Angola.).

Finally, there is another important similiarity. We observed above that with increasing frequency of use and extension to new contexts, the head nouns gradually lose in nominal properties and acquire properties of derivational suffixes. The effect is that for items such as Ewe *-tɔ́* or !Xun *-kˈàò* there is perhaps less justification to talk of nominal rather than of derivational elements. The problem associated with this situation, to be encountered also in many other languages, is one of linguistic taxonomy: Where to trace the boundary between compounding and derivation?

But this problem does not exist with one of the nouns discussed: In both Ewe and !Xun, the noun for 'child', *vi´* and *mà*, respectively, are unambiguously derivational suffixes with diminutive meaning when combining with inanimate nouns – actually, they are the only productive diminutive markers to be found in the two languages.

Grammaticalization

There are no historical records on earlier states of these languages, neither for Ewe nor for !Xun. Still, on the basis of the parameters of grammaticalization (see section 5.2) we can postulate the following development of the construction concerned:

(a) At the earliest stage there was a noun-noun compounding pattern of the endocentric modifier-head type.

(b) Some head nouns, such as 'father', 'mother', 'man', 'woman', or 'child', acquired a higher frequency of use, combining with a larger number of other nouns (extension).
(c) Being used as head nouns with many different other nouns, their meaning became more general and/or schematic, approaching that of functional categories (desemanticization).
(d) In some cases, most clearly in the case of head nouns for 'child', the meaning was generalized to the extent that the erstwhile nouns turned into functional categories, being decategorialized in the process from noun to diminutive suffix (decategorialization).
(e) But decategorialization was more dramatic in the case of the modifying nouns: They lost all salient properties of nouns such as taking modifiers or affixes.

To conclude, what started out as a combination of two nouns ended up as a combination of noun plus derivational suffix. In spite of being suffixes when combined with inanimate nouns, Ewe *-ví* and !Xun *-mà* still exhibit some nominal relics, bearing witness to their nominal origin. For example, the !Xun noun *mà* '(own) child' has a suppletive plural, *m̀hè*, and this suppletism is retained when this item is used as a derivational suffix, cf. (16); we will return to this issue below.

(16) !Xun, W2 dialect

n!āō	'house, houses'		
n!āō-mà	'small house',	n!āō-m̀hè'	small houses'

In other words, we are dealing with a grammaticalization chain leading from nouns in compounds to functional categories. The question that one might wish to pose is the following: What kind of relationship is required between the two nouns to undergo this process? The data available suggest that the requirement is a modifier-head structure of attributive possession. Evidence for this claim can be seen in the fact that in languages with the reverse order head-modifier (more precisely, possessee-possessor), the order in compounds also is head-modifier. The Chadic language Kwami is such a language (Leger 1994: 95ff.); accordingly, the nouns *láwó* 'child', plural *léwní* 'children', *fúbí* 'father', and *núní* 'mother' precede the modifier in noun-noun compounds, even when these nouns assume the schematic functions 'young', 'male', and 'female', respectively, as in the following examples:

(17) Kwami (Chadic, Afroasiatic; Leger 1994: 95ff.).

Form	*Literal meaning*	*Meaning*
láwó shìlò	'child cow'	'calf'
fúbí shìlò	'father cow'	'bull'
núní shìlò	'mother cow'	'cow'

Conceptual shift

We saw above that it is specific concepts serving as heads in compounds that tend to undergo the grammaticalization process sketched above, and the same kind of processes of conceptual shift can be observed crosslinguistically. First, this involves desemanticization: There is a more general process leading from a kinship term with concrete lexical meaning to some more abstract/schematic concept standing for some perceptually salient property relating to size (small vs. normal), sex (male vs. female), etc.

At the same time, each of these kinship terms leads to a different kind of conceptual shift. Nouns for 'father' and 'mother', or 'man' and 'woman' provide a convenient conceptual template for expressing a distinction of sex. Not uncommonly, conceptual shift leads from humans and animals to the plant world, where the distinction 'father' vs. 'mother' tends to be employed to distinguish between big vs. small, strong vs. weak, or barren vs. fruit-bearing exemplars of the same plant species, as for example in the Nilo-Saharan Songhay language Koyraboro Senni (Heath 1999b: 107; see below).

But there are other conceptual templates in addition. 'Father' tends to be associated with ownership and, when used in compounds with inanimate nouns, it may be used to denote 'owner of (property) X', and 'mother' appears to have evoked the concept of 'suffering' in Ewe, in that it combines with other nouns to denote 'a person suffering from a certain ailment'.

The most dramatic patterns of conceptual shift can be found with nouns for 'child'. First, they tend to express 'a young X' when occurring in compounds with animate nouns, and 'a small X' with inanimate nouns. In the latter capacity, 'child' may also denote the subpart of some item. Thus, Ewe *afɔ-ví* 'toe' means literally 'foot-child' and *alɔ-ví* 'finger' is literally 'arm-child', and in the Songhay language Koyraboro Senni, the word for 'finger' is *kabe-ize,* which is composed of *kabe* 'hand' and *ize* 'child' (Heath 1999b: 107). The subpart may also be the smaller of two parts forming one entity. For example, in Koyra Chiini, a 'rifle' is *malfa* while 'bullet' is the 'child (*ije*) of a rifle', and a 'bow' is *toŋgotoŋgo* and an 'arrow' the 'child of a bow' (Heath 1999a: 78).

Another concept commonly derived from 'child' is 'a delineated part of a mass or quantity'. We had examples from Ewe, e.g. *súkli-ví* 'a piece of sugar, sugar cube' (literally, 'sugar child'), in Koyraboro Senni, this concept has given

rise to a singulative marker; for example, the singulative of the noun *himbiri* 'hair' is *himbiri-ize* '(single) hair', literally 'hair-child' (Heath 1999b: 107). In a similar fashion, in the Chadic language Kwami, the noun *láwó* (plural *léwní*) 'child' serves as an individualizing marker in the following example, singling out one (or more) items of a collective entity when used as the head of compounds:

(18) Kwami (Chadic, Afroasiatic; Leger 1994: 95ff.)

míyá	'people'
láwó míyá	'one of the people' (literally, 'child people')
léwní míyá	'some of the people' (literally, 'children people')

Another kind of conceptual shift leads from 'child' to 'member of a social unit', denoting, e.g., inhabitants of a village, town, or country. For example, in Koyraboro Senni, the noun *koyra* means 'town' while *koyra-yze*, literally 'town-child', means 'citizen, native (of town)' (Heath 1999b: 107); we presented similar examples from Ewe in (11d). On the other hand, this shift is manifested in expressions for professional groupings, as in the Swahili examples of (19), where the noun *mwana* '(own) child, offspring' serves as the head of a compound construction (note that attributive possession in Swahili has the order head-modifier, hence the same order is found in compounding).

(19) Swahili (Bantu, Niger-Congo)

Form	*Literal meaning*	*Meaning*
mwana-chama	'child-party'	'(party) member'
mwana-hewa	'child-air'	'pilot'
mwana-maji	'child-water'	'sailor'
mwana-sheria	'child-law'	'lawyer'

The significance that the kinship concepts discussed have for structuring certain domains of experience can be illustrated with the following example from the West African Songhay language Koyra Chiini, involving the nouns *ñaa* 'mother' and *ije* 'child' as heads of compounds: There appears to be a fairly productive pattern in the domain of plant terminology according to which the bare noun stem denotes the fruit of a plant, while a compound with the noun 'mother' as its head denotes the whole plant and with the noun 'child' the seeds of the plant, cf. (20).

(20) Compounds with *ñaa* 'mother' and *ije* 'child' as heads of plant names in Koyra Chiini (Nilo-Saharan; Heath 1999a: 78).

Stem	Meaning	Stem + - *ñaa* 'mother'	Stem + *-ije* 'child'
baani	'pods of an acacia sp.'	'acacia sp. (tree)'	'acacia seed'
koo	'baobab fruits'	'baobab tree'	'baobab seeds'
duŋguri	'beans'	'bean plant' (also: 'pregnant woman')	'seed (of bean)'

To conclude, there is yet another answer to the question of what may happen when two nouns are combined: There appears to be a crosslinguistically common process from noun-noun compounds to derivational structures. That this is a gradual process is suggested e.g. by the fact that there are usually combinations that can be described as transitional, in that they exhibit properties of both compounding and derivation. Note however that presence of a productive pattern of noun-noun compounding does not automatically lead to derivation; both English and German have such a pattern but have evolved hardly any derivational structures.

Inflection

The development from compounding to derivation is crosslinguistically widespread; but this is not normally the way in which inflectional morphology arises. Nevertheless, there are cases suggesting that in specific situations, compounding can also give rise to inflection. We saw above how modifying compounds of the form [noun + 'child'] gave rise to productive patterns of diminutive derivation in a number of languages. But the same combination can also lead to the emergence of inflectional categories. The !Xun examples looked at above illustrate one way in which this may happen.

In this Khoisan language, nouns are essentially transnumeral, that is, they are unspecified for number. Thus, the noun *!xō̄* can mean 'elephant' or 'elephants'. But there is a small number of exceptions: Some frequently used nouns, typically denoting human beings, follow a suppletive pattern, in that singular referents use a different lexeme than plural referents. We had one of these nouns above: *mà* 'child of, offspring' has the suppletive plural form *m̀hè* 'children'. Accordingly, in noun combinations having this noun as their head there is an obligatory singular plural distinction. Thus, whereas *!xō̄* 'elephant(s)' is not number-sensitive, in combinations with *mà* as its head it is – hence *!xō̄-mà* 'young or small elephant' has an obligatory plural form *!xō̄-mhè̀*, that is, whenever *mà* is a derivational suffix there is an obligatory number distinction. Now, with a number of nouns, *mà* has been lexicalized as part of a new noun, and with such nouns the erstwhile plural form of the noun has become an inflectional plural suffix, e.g., *xāmà,* plural *xām̀hè* 'old man', *tc ǵámmà*, plural

tcʹámmɨ̀hè 'bird'. In short, with the grammaticalization of the noun *mà* in modifying compounds, a lexical distinction has turned into an inflectional one.

Nominal plural is generally described as a phenomenon belonging to the inflectional domain of grammar. The development from noun to plural marker via noun-noun combining is in fact well documented, and in most cases it involves nouns for 'people' that serve as the input of grammaticalization. For example, the noun *tûu* 'people' of the South Khoisan language !Xóõ appears to have given rise to the suffix *-tû*, forming the plural of human nouns of noun class 4 (Tom Güldemann, p.c.), and in the French-based creole Seselwa of the Seychelles Islands in the Indian Ocean, the noun *ban* 'group (of people)', historically derived from the French noun *bande*, has been grammaticalized to a plural marker of definite nouns, e.g., *ban pirog* (PL canoe) 'the canoes' (Heine and Kuteva 2002a).

To conclude, compared to derivation, inflection is fairly rare as a grammaticalized output of noun combining; still, it may arise, as the preceding examples have shown.

5.5 Adpositions

Another way in which noun-noun combining may give rise to new functional categories can be seen in the development of adpositions, involving the reinterpretation of (21a) as (21b). Note that this is not the only way in which adpositions – both prepositions and postpositions - may evolve (see Heine and Kuteva 2007, chapter 2), but it is crosslinguistically presumably the most common one.

(21) The rise of adpositions

a	NP_1	-	NP_2
b	NP	-	Adposition

The way this happens involves most frequently attributive possession, that is, modifying combining, i.e. "genitive constructions", where one noun (phrase) is the syntactic modifier (N_1) and the other its head (N_2). That the diachronic development is from attributing possession to adpositional construction, rather than the other way round, is suggested e.g. by the fact that the latter tends to retain morphosyntactic properties that still bear witness to their origin as constructions of attributive possession. For example, the English adpositions *in front of, because of* exhibit properties of attributive possession, such as the possessive marker *of* and the word order head – modifier, even though they are now unambiguously prepositions. Accordingly, the placement of adpositions

(at least of the type looked at here) is determined by syntactic principles, in that a head – modifier order will give rise to prepositions and modifier – head order to postpositions.

But the process leading from (21a) to (21b) is not restricted to attributive possession. It may as well be based on appositive combining, where N_2 is added to N_1 as an apposition serving to specify or further elaborate the meaning of N_1, and having the same argument status as N_1. This strategy is pragmatically rather syntactically determined, that is, the apposition almost invariably follows the other noun – irrespective of whether the language concerned has head – modifier or modifier – head word order. In some languages, the appositional noun takes a possessive modifier cross-referencing the preceding noun (e.g., 'the house, its top'). Appositive combining of this type gives rise most of all – though not necessarily – to locative constructions, where the apposition provides a locative specification of the other noun. It is in particular – but again, not always – body-part nouns that serve as appositions. Example (22) from the East Cushitic language Dhaasanac of southern Ethiopia illustrates this kind of combining, where the second noun delimits or specifies the location of the first noun. Of the ten nouns that have been grammaticalized to postpositions, eight denote body parts, as table 5.3 shows.

(22) Dhaasanac (East Cushitic, Afroasiatic; Tosco 2001: 240-4)

kúo	ɓíl	ʔaf	taalliʔ
2.SG.S	house	mouth	stand.PERF

'Were you (standing) in front of the house?'

Table 5.3: The grammaticalization of body part nouns to adpositions in Dhaasanac (East Cushitic, Afroasiatic; Tosco 2001: 240-4)

Form	*Meaning*	*Literal meaning*
ʔafu	in front of	mouth
bál	next to	chest
mé	in front of	head
sugu	Behind	back
ʔél	behind, back	back
géere	Inside	belly
ʔinnu	around, amidst, between	eyes
tóomo	between	waist

5.6 Classification

But the combination of two nouns where one acquires a modifying function for the other may also lead to other forms of linguistic constructions. One way in which it can affect the typological profile of a language concerns what is commonly described as systems of classifiers (CL). In the present section we will look at such systems with a view to determining some of the effects noun combining can have on the development of some classifier categories. To this end we will be restricted to two types of classification, namely noun classifier and numeral classifier systems. Many languages have either of the two systems, but some languages have both, and both may occur within the same utterance (Aikhenvald 2000: 90).

We are not able to do justice to the structure of nominal classifiers, for which see the rich literature on this subject (Aikhenvald 2000 and the references therein). Our interest is simply with what the conceptual process is when a noun assumes the role of a classifier of another noun. We will not be concerned with systems that are most commonly associated with noun classification, namely noun class systems of the type found e.g. in Niger-Congo, some Australian and Amazonian languages, or gender systems as they occur e.g. in Indo-European or Afroasiatic languages,[10] for the following reason: These systems are usually grammaticalized to the extent that it is in most cases not possible to reconstruct their genesis and the motivations underlying them. Since we are concerned in this paper with nouns, we will also ignore classifiers derived from verbs, and will have little to say on verbal classifier systems.

Languages with noun classifiers are found in particular in Australia, Mesoamerica, Amazonia, and eastern and southeastern Asia. Classifier phrases consist of a classifier (CL) plus the classified noun, as in (23).

(23) Yidiny (Pama-Nyungan; Aikhenvald 2000: 83)

jarruy	durrguu
CL.BIRD	owl

'mopoke owl'

The number of classifiers to be found in a given language varies from two (in the Australian language Emmi) to several hundred in some languages of East and Southeast Asia. In other languages again, almost any generic noun can be used as a classifier (Aikhenvald, 2000: 84-5). Classifiers are in the

[10] See Aikhenvald (2000: 95) on typological differences between these and nominal classifier systems.

majority of cases derived from nouns, and in many cases they are still homonymous with their lexical sources; for example, the Yidiny classifier *jarruy* in (23) is homonymous with the noun *jarruy* 'bird'.

Noun classifiers are mostly free morphemes, but they may as well be affixes on nouns. They are either a subclass of nouns or form a morpheme class of their own. The extent to which the use of noun classifiers is obligatory differs from one language to another. They are not always restricted to nominal structures; at least some of them can be used as agreement or anaphoric markers, as in the following Yidiny example:

(24) Yidiny (Pama-Nyungan; Aikhenvald 2000: 87)
ngayu ganguul bugaany nyundu minya baga lnyunda.
I.NOM wallaby.ABS eat.PAST you.NOM CL.EDIBLE.FLESH.ABS spear-SUB
'I ate the wallaby, which animal you speared.'

Numeral classifiers are found in many parts of the world; they are particularly common in East and Southeast Asia and Mesoamerica, but extremely rare in Africa, Europe, and Australia. They occur contiguous to a numeral (or other quantifier) in quantifying noun phrases, cf. (25).

(25) Tashkent Uzbek (Aikhenvald 2000: 102)

bir	bâs	karâm
one	CL.HEAD.SHAPED	cabbage

one (head of) cabbage

They tend to be free forms, but they may as well be clitics or affixes on numerals or, very rarely, on nouns, and in some languages they are treated as a subclass of adjectives. In numeral classifier constructions, the noun (N) is generally the head, and the classifier (CL) usually forms one constituent with the numeral (NUM). Constituent order depends on the general syntactic rules of the language concerned; crosslinguistically the most common constructions are [NUM-CL]-N, e.g. in Chinese, and N-[NUM-CL], e.g. in Thai; what is common to all constructions to be found is that the numeral and the classifier always occur adjacent (Aikhenvald 2000: 104-5).

Numeral classifiers may form an open-class category, where virtually any noun can be used as a classifier, as in Thai and Lao, they may number several hundred, as in the Mayan language Tzeltal, but their number can as well be severely limited, as in the Tai language Nung, where there are only four classifiers. While noun classifiers are not always used obligatorily, numeral classifiers are normally obligatory whenever a numeral is used in a nominal construction. However, the higher the number value of the numeral is, the more likely it is that the classifier is omitted; note further that there are languages

where not every noun takes a numeral classifier. Finally, numeral classifiers (though not noun classifiers) can be "repeaters", that is, the classifier is the same as the classified noun, e.g.,

(26) Mal (Mon-Khmer; Aikhenvald 2000: 104)

ʔən	ʔui	ciaŋ	ba	ciaŋ.
I	have	house	one	CL.house

'I have one house.'

Finally, mention should also be made of noun incorporation, that is, of noun-verb compounds where the noun is grammaticalized to a part of the verb, thereby giving rise to verb classification. This is the case in what Mithun (1984) calls classificatory noun incorporation, where the incorporated noun having a general meaning narrows the scope of the verb. Thus, in the Siberian language Koryak, the noun *qoya-* 'reindeer' in combination with the verb *nm-* 'to kill' yields *qoyanm-* 'to reindeer-slaughter', and the noun *dulg* 'tree' of the Australian Gunwinggu language narrows the scope of the verb *-naŋ* 'to see' to produce *–dulg-naŋ* 'to tree-see'.

Grammaticalization

As far as the evidence available suggests, the rise and development of both types of classifiers is essentially the result of the grammaticalization of nouns as classifying categories. Concerning the choice of lexical sources of classifiers, Aikhenvald observes:

> The choice of which set of nouns becomes classifiers is typically language-, family-, or area-specific […]. Australian languages typically use generic nouns such as 'vegetable food', 'meat' (or 'edible animal'), and various human divisions (e.g. 'man', 'woman', 'person') as generic classifiers. Mayan languages typically have a number of classifiers which refer to the domain of social interaction, culture and beliefs (e.g. 'male kin', 'respected male', 'deity'). Classifiers can come from words for 'animal', 'dog', 'corn', 'rock', 'water' (Aikhenvald 2000: 353).

While there is little information on the nature of the process leading to the rise of classifiers, the evidence that exists points to a process whereby noun-noun combinations gradually develop into noun-classifier constructions in that one of the nouns assumes a more general, classifying function. The process involves all four parameters of grammaticalization. Extension means that the noun acquiring properties of a classifier comes to be increasingly used

with a wider range of nouns classified, with the effect that the meaning of the classifier is increasingly generalized on the one hand, and modified by the meaning of the nouns with which it co-occurs on the other.

Aikhenvald (2000: 82) observes that there is often a generic-specific relationship between the classifier and the noun classified. We argue that the generic nature of classifiers is due to desemanticization, that is, to the loss of specific semantic properties of their nominal sources. As we will see below, however, loss can – and frequently is – made up for by the emergence of new properties resulting from the extension of the item to new contexts.

Desemanticization is minimal, if not absent, in the case of repeaters (see above), where the classifier tends to express largely the same meaning as the noun classified. But there are also quite a number of cases of grammaticalization from noun to classifier without desemanticization, where a generic noun gives rise to a generic classifier having essentially the same range of referents. For example, in the Western Austronesian languages Minangkabau and Acehnese, *bungo* and *bungöng*, respectively, are generic words for 'flower', and both have given rise to generic classifiers for flowers – that is, there has been decategorialization from noun to classifier but no semantic change. Further common examples involve nouns for 'man' and 'woman' which have developed into noun classifiers, respectively, for male and female referents (Aikhenvald 2000: 402-3). There is also no desemanticization when a noun on the way to classifier acquires a more specific meaning. For example, the noun *xiinaq* 'man' of the Mayan language Mam appears to have provided the source for the noun classifier meaning 'old man, respectfully'.

Otherwise however there is a generalization of meaning on the way from noun to classifier. There appears to be a difference between noun classifiers and numeral classifiers in the nature of this process. The former tend to involve a development from specific to generic meaning relating to material makeup and function, while the latter tends to highlight specific properties of the object classified, such as shape. For example, in the Western Austronesian language Minangkabau, the noun *batang* 'tree' appears to have given rise on the one hand to a noun classifier meaning 'tree as a generic' and on the other hand to a numeral classifier meaning 'vertical long object, often made of wood' (Aikhenvald 2000: 302).

Once a noun assumes the function of a classifier, it undergoes decategorialization, losing many of the properties characterizing its use as a noun: It becomes restricted in its freedom of placement within the clause, and it loses the ability to take its own modifiers and determiners. In a number of cases, the process also involves erosion, in that the classifier may lose in phonetic substance. In the Mayan language Mam, the development from noun to noun classifier tends to lead to a shortening of vowels, e.g., *q'aa* 'young man' (noun) > *q'a* classifier, *txiin* 'young woman' (noun) > *txin* (classifier), while in

the Australian language Olgolo, the nouns *úyu-* 'fish' and *ínha-* 'animal' appear to have been shortened, respectively, to *y-* and *nh-* in their development to generic classifiers (Aikhenvald 2000: 91; 357). In the Mayan language Akatek, the noun *winaj* 'man' appears to have been reduced to the noun classifier *naj* used for human beings, saints and mythological animals, e.g.,

(27) Akatek (Mayan; Zavala 2000: 134-6)
naj me'
CL sheep
'the sheep'

The extent to which desemanticization takes place is a function of the extension parameter mentioned above, that is, of the number of nouns with which the classifier combines. An extreme example is provided by cases where a classifier combines only with one noun: In such cases, the meaning of the classifier is determined exclusively by the meaning of that noun. For example, in the Benue-Congo language Kana, the numeral classifier *nɛ̄ɛ̄*, derived from the noun for 'person', combines only with the noun for 'guest'; the meaning of this classifier is thus highly specific, being determined by one noun only. But classifiers tend to combine with larger paradigms of nouns, and the larger the paradigm of nouns is, the more desemanticized the classifier will be. Common semantic properties that tend to survive or to surface are in particular the following (see Aikhenvald 2000: 404-5 for references):

(a) Function. For example, in the Australian language Ngan'gityemerri, the noun *syiri* 'weapon' became extended to all things involving striking, including lightning, and in the North Arawak language Tariana of Amazonia, the classifier for 'canoe' is used for any vehicle.
(b) Material. In the languages of the Kanjobalan branch of Mayan, the word for 'corn' is also used as a classifier for corn and products made of corn.
(c) Shape. In the Austroasiatic language Dioi, the noun for 'leaf' is used as a classifier for paper, fabric, and board, and in Indonesian, the noun *batang* 'tree, trunk' is used to classify vertical things fabricated from wood and other long inflexible things.

More generally, desemanticization tends to involve an extension to a larger class of referents, and thereby a loss in semantic specificity. For example, the noun *bana* 'fresh water' of the Pama-Nyungan language Yidiny is used to classify all drinkable liquids, and the noun *ix* or *'ix* 'woman' of the Mayan language Akatek appears to have provided the source for the classificatory particle *'ix* used for human beings, saints and mythological animals (Zavala 2000: 134), see also the discussion above about the development *winaj* 'man' > noun classifier *naj* used for human beings, saints and mythological

animals in Akatek. The Thai item *tua* was used in earlier documents exclusively as classifier for four-legged animals; later on it underwent dramatic extension, with the effect that it now combines with a wide range of referents, including mannequins, tables, ghosts, beds, numbers, or underwear – to the extent that it is hard to find any common semantic denominator[11] (Aikhenvald 2000: 314). The final stage of desemanticization would be reached when the classifier can combine with all nouns and thereby loses all its semantic content.

Conclusions

The evidence presented by Aikhenvald (2000) and others suggests that noun-noun combinations provide one of the main, if not the main source for the genesis of classifiers. However, in most of the cases discussed above there are no historical records on the directionality of change. That our reconstruction of a development from noun to classifier is nevertheless correct is suggested by the following pieces of evidence: First, there are some historically attested cases, and they are supportive of the unidirectionality hypothesis from noun to classifier and from less to more grammaticalized items. Classifiers were used sporadically in the classical period of Chinese (500-206 BC), and from about 100 AD their use increased. For example, the Chinese classifier *gè* goes back to an item with the meaning 'trunk of bamboo tree' in the Shang Dynasty (c. 1400 BC), it subsequently acquired the meaning 'trees' and then 'wooden objects', and in the Tang Dynasty (600-900 AD) it appears as a general classifier. In a similar fashion, *tiáo* meant 'small branch' in the Shang Dynasty and since the Song Dynasty (960-1117 AD) it serves as a general classifier for long things (see Aikhenvald, 2000: 410 for more details; see also Erbaugh 1986; Bisang 1996). Second, we are not aware of any examples of a reverse development from classifier to noun. While it may turn out that such examples exist, they are likely to be extremely rare and exceptional. And third, as we saw above, classifiers exhibit exactly the same characteristics of grammaticalization vis-à-vis their non-grammaticalized counterparts as other functional categories do.

To conclude, we seem to be dealing with yet another instance of a development where the combination of two independent nouns is put to new uses, in that one of the nouns assumes a classifying function for the other noun.

5.7 On creativity

Noun-noun combining can be described as a process leading to the "creation" of new meanings, constructions, and words by combining independent nouns by means of specific strategies such as attributive possession (modifying

[11] But see Carpenter (1987: 45-6) and Downing (1996: 101-2) for a prototype-extension approach.

combining), coordination (additive combining), or juxtaposition (appositive combining). The term creativity has been used in a wide variety of different ways; the way we define the term in the present work is as follows: Creativity is an activity leading to the design of a novel object or idea by modifying existing norms, where this modification comes to be accepted by those who are responsible for maintaining these norms. With reference to the subject matter of this book, the expression "novel object or idea" stands for a meaning or linguistic structure that previously did not exist in this form in the language concerned, while "those who are responsible" are the speakers of that language. "Modification" means that the resulting structure cannot immediately be derived from existing norms (or rules) or conventions; rather, it consists of some break of constraints on the pragmatics, the morphosyntactic structure, and/or the (compositional) semantics of the items concerned. Note that not all modifications of norms lead to new creations. In fact, the vast majority do not, ending up as instances of "deviant" language use. It is only when modifications come to be accepted by the speakers of the language that we speak of creativity. Creativity thus may mean that existing norms are re-defined – that is changed; it contrasts sharply with productivity, which consists simply in the regular application of existing rules or norms.

This definition, which is based on Csikszentmilhályi (1990), is not entirely satisfactory since it both includes and excludes a number of phenomena that some would consider essential for an understanding of creativity; still, it takes care of most salient instances of what tends to be subsumed under "creativity" and of the kind of conceptual processes that we are concerned with here. We may illustrate the use of this definition with the English compound *egg head*: Those who designed this concept modified existing norms in that they proposed a meaning that cannot compositionally be derived from that of its parts; the meaning is novel in that there does not appear to be any other English word expressing exactly this meaning, and this compound and its meaning have come to be accepted by speakers of English.

Compounding is a productive mechanism which may but need not involve creativity. Obviously, alternative compounds are paradigm instances of creative activity but there are also other types of noun-noun compounds that can be called "creative" in accordance with our definition. In the following we will illustrate the creative use of modifying compounding by looking at the West African Niger-Congo language Ewe. In the contact situation between Ewe speakers and societies in Europe, speakers acquired a range of new concepts relating to western culture and technology. The primary strategy that Ewe speakers used in the 19th and early 20th century for creating terms for new concepts was modifying compounding, a highly productive mechanism of

the language. In the same way as in the inalienable possessive construction, the head follows the modifier in compounding. The following examples from Ewe, taken from Westermann (1905), are meant to illustrate the creativity that Ewe speakers used in forming new words for concepts that they were exposed to as a result of contact with the western world. Our examples are restricted to noun-noun compounds with the noun *ga* 'metal' as a modifier. The meaning of this noun was extended to also denote specific items made from metal, namely 'money' and 'watch, clock', although the latter concept was also expressed by the alternative compound *ga-·o- ⁄ókuĭ* (metal-strikes-itself). In combination with color adjectives, the use of *ga* was extended to express specific kinds of metal, e.g., *ga dzɛ̋* (metal red) 'brass, copper', *ga yibɔɔ* (metal black) 'iron, iron-like metal'.

One domain of new concepts structured by modifying compounds was that of household goods, e.g., *ga-tí* (metal-stick) 'metal spoon', *ga-zé* (metal-pot) 'kettle, metal pot', *ga-nú* (metal-thing) 'tin'. Furthermore, there were a number of other artefacts that came to be expressed by means of the noun *ga* 'metal' as a modifying constituent, such as *ga-ŋkúí* (metal-eye.is.it) 'spectacles', *ga-kă* (metal-string) 'wire', *ga-kpɔ́* (metal-fencing) 'wire fence'. A new institution associated with metal that Ewe speakers were confronted with was that of prison, giving rise to compounds such as *ga-xɔ* (metal-house) 'prison', or *ga-tɔ́* (metal-owner) 'prisoner'. Another domain concerned means of modern transportation, e.g., *ga-sɔ́* (metal-horse) 'bicycle', *ga-mɔ́* (metal-way) 'railway', *ga-fɔkpa* (metal-shoe) 'horseshoe'. In yet another domain, namely that of commercial interaction, it was not the meaning 'metal' but rather that of 'money' that was exploited for expressing new concepts, e.g., *ga-sí.así* (money-hand.hand) 'cash (payment)', *ga-ví* (money-child) 'small change'.[12]

These examples show that the Ewe noun *ga* in combination with some head noun has provided a rich source for forming new concepts by means of modifying compounding. The question now is whether this process can be called creative in accordance with the definition we gave above. One of the two requirements of this definition is clearly fulfilled: The compounds have been accepted by the speakers of the language. The answer is more complex in the case of the second requirement of modification of existing norms. With regard to the syntax of the construction, the answer is clearly in the negative since we

[12] There are a number of further compounds that are derived from the 'money' meaning of *ga*. For example, we observed above that in its 'metal' meaning, *ga* has given rise to the compound *ga-tɔ́* 'prisoner'. But this compound has a second meaning, 'rich person', which appears to be derived from the 'money' meaning.

are dealing with the productive application of an existing rule, whereby two nouns are combined, with the first assuming the function of a modifier and the second that of the head of the construction.

But what about the semantics of the compounds: Is it suggestive of a modification of existing norms? It would seem that in a number of these compounds the answer is also in the negative since the meaning of compounds can be derived compositionally from that of its constituent parts – e.g., when a kettle (*ga-zé*) is described as a 'metal pot'. Still, there are other cases where one might argue that there is a modification of norms – hence creativity, in that compounding led to a transfer from one domain of human experience to another, e.g., from metal to prison (*ga-xɔ*), or from animate to inanimate concepts, as in compounds such as *ga-sɔ́* (metal-horse) 'bicycle' or *ga-mĭ* (metal-excrement) 'rust (of iron)'.

On the basis of this definition, noun-noun combining in general and compounding in particular do not necessarily entail creativity, and creativity is not an all-or-nothing matter; rather, there is a scale extending from non-creative productivity to full creativity. Our usage of creativity contrasts thus can be described in the following way:

(a) Creativity is not a specifically linguistic phenomenon; rather, manifests itself in virtually all domains of human behavior – including domains of behavior where recursion is ostensibly absent.
(b) It is unpredictable within limits.
(c) Rather than being stable across space and time, it entails language change; with each new act of creativity, the language is no longer exactly what it used to be prior to this act.
(d) It is one of the main driving forces of innovation, i.e., of language change, in that it constantly leads to the rise of new meanings and new constructions.

Perhaps the most controversial component of this description can be seen in (b). Take the Ewe example *ga-mĭ* (metal-excrement) 'rust (of iron)' that we just presented: "Unpredictablity" consists in the fact that Ewe speakers recruited the concept 'excrement' to serve as a metaphorical vehicle to express the concept concept 'rust' – they could have chosen various other vehicles. At the same time there is also a limit as to what could serve as a vehicle in this case, in that it is only concepts that both the speaker and the hearer will accept to provide a possible cognitive link to 'rust' that could be recruited.

5.8 Conclusions

A question that we posed in the introduction to this paper was what one can do with two nouns, and what people in the past may have achieved by combining

two nouns. The answer we gave in this paper was bluntly: a lot. We saw in the preceding sections that combining free nouns can lead to noun modification, compounding, derivation, and even to inflection. It can also lead to the emergence of word categories such as adjectives and adpositions, and it may also give rise to classifying morphemes such as noun and numeral classifiers – in other words, noun-noun combining can be held responsible for a wide range of grammatical categories. And the process described in this paper is essentially unidirectional: We will not expect that any of these categories will develop diachronically into nouns and combinations of nouns.

Combining two nouns is on the one hand a non-creative activity as long as it simply consists of applying existing "rules" productively. However, to the extent that this involves combinations that were hitherto considered inappropriate and/or leads to the propagation of novel meanings that cannot be predicted from the sum total of the meanings of the nouns combined, and that come to be accepted by the community of speakers, this is a creative activity. Such creativity is not restricted to but is most obvious in alternative compounds, such as English *egg head, flatfoot*, *half-wit*, *highbrow*, *lowlife*, *redcoat, redhead*, *sabertooth, tenderfoot*, *whitecap, white-collar*, etc., or the examples we had above, like Mandarin *yún-yǔ* (cloud-rain) 'sexual intercourse' (= the sport of cloud and rain) and Vietnamese *giăng-hoa* (moon-flower) 'flirtation, ephemeral love'.

What accounts for the fact that certain kinds of nouns tend to be combined, giving rise to new structures such as compounding, nominal modification, derivation, noun classification, adpositions, etc.? Observations on grammaticalization suggest that there is a cluster of the following factors in particular: First, there is cognitive manipulation. By combining two words, A and B, in a novel way, a new concept may be expressed. In one type of combining – the one that we were centrally concerned with here, A assumes a modifying or specifying function for B. Second, there is the parameter of extension: Combining A and B is a necessary but not a sufficient requirement for grammaticalization to take place. What is required in addition is extension, whereby the use of A is extended to other members of the paradigm to which A belongs, i.e., A_1, A_2, etc. Third, there is desemanticization: The larger the paradigm of A-members becomes, the more will B lose in semantic specificity, that is, the more general its meaning will be. Fourth, in accordance with the parameter of decategorialization, the more productive the pattern becomes, the more are A and/or B likely to lose in properties characteristic of their erstwhile categories, and they may adopt other properties characteristic of new contexts.

Extension entails an increase in frequency of use, or what Bybee (2002) also refers to as repetition:

> […] repetition is the glue that binds constituents together. Thus, I hypothesize that hierarchies of constituent structure are derivable from frequent sequential co-occurrence. In this view, the more often particular elements occur together, the tighter the constituent structure. Thus, low-level constituents such as a determiner, *the*, and a noun, such as *puppy*, frequently co-occur, while higher-level constituents, such as an NP, *the puppy*, and verbs such as *ran, licked,* or *slept* occur together less often (Bybee 2002: 111).

Frequency of use plays an important role in the rise of new functional categories out of noun-noun and other word combinations. At the same time we maintain, as is also acknowledged by Bybee, that the primary motivation for the process is semantic (or conceptual), and that frequency is derivative of this motivation.

In a number of works on language genesis, e.g., in studies on complex adaptive (self-organizing) systems, it is assumed that the rise of grammar is contingent on the presence of a sufficiently large lexicon (e.g., Li 2002: 90). While this may be so, this does not appear to be a crucial factor: As we saw in this paper, the presence of one word category with only two instances is – in principle – enough to produce a wide range of different grammatical structures. This suggests that quantity is not necessarily a decisive issue for grammatical categories or relations to arise.

Following Heine and Kuteva (2007) we hypothesize that the processes described in this paper can in some way be traced back to the earliest forms of human language. In their reconstruction of grammatical evolution, these authors do not deal with noun-noun combining, and the question arises at what stage it may have emerged in early language. Speaking about compounding – which, as we showed above, comes at a stage later than combining – Jackendoff (1999; 2002: 249-50) suggests that compounding is a possible "protolinguistic fossil" and "a plausible step between raw concatenation and full syntax" on account of the relations obtaining between the words of a compound. In support of this suggestion he presents in particular two kinds of evidence: First, he draws attention to observations according to which in the Basic Variety of late second language learners as proposed by Klein and Perdue (1997: 332) the formation of new words is limited to noun-noun compounds. And second, he argues that children improvise compounds very early.

Neither of these arguments is entirely convincing. Compounding is not clearly productive in all instances of the Basic Variety (Sandra Benazzo, p.c.). In the acquisition process of English-speaking children, compounding has been found to be important. The first stage in the acquisition of compounds leads children to create a structure instantiated by combinations such as *wash-man,*

open-man for which there is no equivalent in the adult languages which they are exposed to. The strategy tends to be described in the relevant literature as "overextension", where children extend the use of their words to refer to things that would not be covered by the adult word. Overextensions appear most commonly in children's speech from about age 1;6 to 2;6 and may affect as many as 40% of children's early words (Clark 2003: 88). And compounding is not confined to English-speaking children; children acquiring German, Swedish, and Icelandic also construct new root compounds from as young as age two (Clark 2003: 297). But all these are languages having a highly productive mechanism of compounding, while many other languages, such as the Romance or Bantu languages, have not. It would seem in fact that in such languages, compounding does not nearly play the role it does in the acquisition of English: Children tend to wait until age three or four before they make much active use of novel word-formation, relying on mechanisms other than compounding, such as derivational means or possessive constructions, using prepositional phrases, as introduced, e.g., by *à* or *de* in French (see Clark 2003: 298).

Notice that, for the present purposes, it is important to recognize the distinction between *combining* and *compounding*. On the basis of the scenario proposed in table 5.1, nouns must have been the first category to emerge in early language (layer I), and it is reasonable to assume that, once there was such a category, it was possible to combine different instances of this category. But there are also reasons to argue that compounding was not among the earliest mechanisms of word combining. The first reason relates to the typological distribution of compounding just alluded to: While being widespread crosslinguistically, noun-noun compounding is not found everywhere in the world; it seems to be common in languages having a pronounced modifier-head word order and distinctly less so in head-modifier languages. More research is therefore required on whether it is in fact a situation like the one found in English, as Jackendoff (2002) argues, or else a situation as found in French that reflects an earlier structural pattern. If early language was characterized by modifier-head ordering then it would in fact be plausible to hypothesize that compounding arose early (Fritz Newmeyer, p.c.).

Other reasons concern grammaticalization theory. According to table 5.1, adjectives must have arisen fairly early in the evolution of language, namely at layer III. Now, a common – though not the only – diachronic source for adjectives is provided by nouns assuming the role of modifiers in noun-noun combinations (see section 5.2). This means that the presence of such combinations must have preceded that of adjectives in time; in other words, noun-noun combining must have been present at least at layer III, if not earlier. Another common process that we discussed above (section 5.4) concerns the development from compounding to derivation (and occasionally to inflection).

In our scenario of grammaticalization of table 5.1, categories that may be suggestive of a derivational behavior did not arise in the early layers of evolution – certainly not within the first four layers. While this observation does not provide any clues as to when compounding emerged, it suggests at least that there is no evidence for an early emergence of it.

But there is another reason why we are hesitant to accept the claim that compounding is a possible "fossil" of language evolution. A common source, if not the main source, of (modifying) compounds is provided by attributive possessive ("genitive") constructions. This observation is in accordance with the parameter of decategorialization, in that modifying nouns in possessive constructions generally show a lower degree of decategorialization than modifying nouns in compounds; for example, whereas the former usually dispose of the whole range of nominal properties (such as the ability to take modifiers or to be inflected) this is not normally the case with the latter. This suggests that there must have been attributive possessive constructions before noun-noun compounds arose – in other words, it is unlikely that compounding belonged to the earliest forms of word combining in human language.

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Abbreviations

ABS = absolutive	CL = classifier	DIM = diminutive
GEN = genitive	NOM = nominative	N = noun
NP = noun phrase	NUM = numeral	PAST = past tense
PERF = perfect	PL = plural	S = subject
SG = singular	SUB = clause subordinator	1,2,3=first,second,third person.

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