CLASSIFIER CONSTRUCTIONS OF TURKISH

TACETTİN TURGAY

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Tacettin Turgay

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The thesis of Tacettin Turgay

has been approved by:

Prof. Balkız Öztürk-Başaran
(Thesis Advisor)

Assoc. Prof. Elena Guerzoni

Assist. Prof. Kadir Gökgöz

Assist. Prof. Nilüfer Şener
(External Member)

Assist. Prof. Dilek Uygun
(External Member)

January 2020

DECLARATION OF ORIGINALITY

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ABSTRACT

Classifier Constructions of Turkish

This dissertation addresses three interrelated issues concerning classifier constructions in Turkish: (i) semantics of bare noun phrases, (ii) the function of classifiers and syntactic constituency of classifier constructions, and (iii) syntax and semantics of number marking. Regarding the first issue, it is argued that Turkish bare noun phrases denote properties of entities but are inherently ambiguous with respect to whether they take kind or object entities as their domains. With respect to the second issue, it is argued that classifiers serve to restrict the ambiguous domain to object individuals only. Syntactically, a measure phrase is proposed which hosts classifiers and measure words in its head position and numerals in its specifier position. The resulting constituent, a property-denoting μP, is then applied to nouns predicatively or attributively through adjunction. It is demonstrated in particular that μP only combines with number-neutral bare nouns. As for the third issue, it is demonstrated that number specification in Turkish is relevant for DPs only, and is expressed in the φP that projects above the DP. Sub-DPs are shown to lack number specification. Number markers on bare nouns are uninterpretable agreement reflexes which must be checked against interpretable counterparts in the φP or in some other functional head. As they lack number specification, sub-DPs always receive a number-neutral reading, and thus are restricted to contexts which can handle such interpretations. DPs, on the other hand, can never receive number-neutral readings. Overall, the proposed number system is shown to have a broader empirical coverage crosslinguistically.

ÖZET

Türkçede Sınıflayıcı Yapılar

Bu çalışmada Türkçenin sınıflayıcı yapılarına ilişkin birbiriyle ilintili üç konu ele alınmaktadır: (i) yalın ad öbeklerinin anlambilimsel durumu, (ii) sınıflayıcıların işlevi ile sınıflayıcı yapıların sözdizimsel bileşimi, ve (iii) sözdizim ve anlambilimde sayı (tekillik/çoğulluk) gösterimi. Birinci konuya ilişkin olarak, Türkçede yalın ad öbeklerinin varlıkların özelliklerini ifade ettiği, ancak nesnel varlık alanını mı yoksa türsel varlık alanını mı seçtiklerini konusunda özü itibariyle belirsiz oldukları savunulmaktadır. İkinci konu özelinde, sınıflayıcıların bu belirsiz alanı sadece nesnel varlıkları kapsayacak şekilde daralttığı gösterilmektedir. Sözdizim tarafında ise, öbek başı konumunda sınıflayıcılar ile ölçek ifadelerini, belirleyici konumunda ise sayısal ifadeleri (rakamları) barındıran bir ölçek öbeği olduğu öne sürülmektedir. Özellik belirten bu ölçek öbeğinin, ilgili ada yüklemleme ya da eklenti yoluyla niteleme olarak uygulandığı ve yalnızca sayıdan bağımsız yalın adlarla birleşebildiği gösterilmektedir. Üçüncü konuya gelince, Türkçede sayı gösteriminin sadece belirleyici öbekleri için geçerli olup, belirleyici öbeği üzerine yansıtılan φ öbeğinde işaretlendiği gösterilmekte, belirleyici öbeği katmanı barındırmayan adlarda ise sayı gösterimi olmadığı sonucuna varılmaktadır. Buna göre, yalın adlarda bulunan sayı işaretleyicileri, φ öbeği ya da başka bir işlevsel katmanda bulunan yorumlanabilir özniteliklerin yorumlanamaz yansımaları olan uyum ekleri şeklinde karşımıza çıkmaktadır. Sayı gösterimi olmayan, belirleyici öbeğinden küçük adılsıl yapılar ise her zaman sayıdan bağımsız yorumlanmakta, dolayısıyla da dağılımları bu yoruma izin veren bağlamlarla sınırlı kalmaktadır. Öte yandan φ öbeğinin tümleci konumunda bulunan belirleyici öbekleri hiçbir zaman sayıdan bağımsız yorum

alamamaktadır. Bütünsel bakıldığında, öne sürülen yaklaşımın geniş bir diller arası veri kümesini açıklayabildiği gösterilmektedir.

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ABBREVIATIONS

#P	number phrase
1PL	first person plural
1SG	first person singular
2PL	second person plural
2SG	second person singular
3PL	third person plural
3SG	third person singular
ABIL	ability marker
ABL	ablative
ACC	accusative
ADES	adessive
AGR	agreement
AH	animacy hierarchy
AOR	aorist
APPR	approximative
ATTR	attributive
BNP	bare noun phrase
CARD	cardinal(ity)
CAUS	causative
CC	comitative coordination
CCA	close conjunct agreement
CL	classifier
CLC	classifier construction
CLP	classifier phrase
COLL	collective
COM	comitative
COMP	compound marker
COND	conditional
COP	copula
CSC	coordinate structure constraint
CU	categorial uniformity
DAT	dative
DECL	declarative
DEL	delimitive
DEM	demonstrative
DET	determiner
DIST	distributive
DIV	division
DRV	derivational affix
EPL	event plurality
EPPC	exclusively used plural pronoun construction
FI	full interpretation
FoFC	final over final constraint
FUT	future
GEN	genitive
HAB	habitual
IMP	imperative

IMPF	imperfective
INST	instrumental
IPPC	inclusively used plural pronoun construction
IU	interface uniformity
KC	kind word construction
Ki	kind word
LOC	locative
M	measure word
MC	measure word construction
MCLC	multiple classifier construction
MOD	modal
MP	minimalist program
NEG	negative
NEUT	number-neutral
NMP	nominal mapping parameter
NNC	number-neutrality condition
NOM	nominative
NOML	nominalizer
NUM	numeral
OM	object marker
OPT	optative
ORD	ordinal
P&P	principles and parameters
PART	partitive
PASS	passive
PAUC	paucal
PERF	perfective
PL	plural
POSS	possessive
PPC	plural pronoun construction
PROG	progressive
PRS	present
PST	past
QUES	question
RC	relative clause
REL	relativizer
SFP	sentence final particle
SG	singular
TOP	topic
TRANS	transitivity marker
UP	uniformity principle
V&L	Vassilieva & Larson (2005)
μP	measure phrase

CHAPTER 1

INTRODUCTION

1.1 Aim

Classifier constructions (CLCs) of the form [Numeral-Classifier-Noun], or one of its permutations, have occupied a central stage in studies of language typology, syntax and semantics, as they are believed to hold interesting clues into the internal constituency of nominal phrases. These constructions are particularly challenging in that linguists have make a number of assumptions regarding the syntax and semantics of each component in the construction: the numeral, the classifier, and the noun. Given that a classifier construction minimally contains these, an analysis that fails to account for how each component affects the construction would at best be incomplete.

From a typological point of view, classifiers (CLs) split world languages into three groups: obligatory classifier languages, optional classifier languages, and non-classifier languages. Languages of the first group always require the presence of a classifier between the numeral and the noun; languages of the second group allow but do not require a classifier; while those of the third group lack such elements.

(1) Classifier typology

a. liang *(*ge*) xuesheng (Chinese, obligatory CL)
two CL student
'two students'

b. iki (*tane*) öğrenci (Turkish, optional CL)
two CL student
'two students'

c. two students (English, non-CL)

Throughout the discussion, I will represent each group with data from Chinese, Turkish, and English respectively, referring to other languages where discussion requires further illustration. The relevant question for this typological contrast is: What underlies this variation, i.e. what sets these three groups of languages apart?

The semantic side of the discussion centers around the semantics of each component in the construction and addresses the questions: What does each component denote; and how do they compose in the construction to yield the semantics they do? As we will see in Section 2.2, theories have been proposed that blame the variation on (i) a contrast in the semantics of the nouns of these languages, (ii) a contrast in the semantics of their numerals, and (iii) the syntactic context they occur in.

The syntactic discussion is concerned with the internal constituency of classifier constructions, and why their absence leads to ungrammaticality in Chinese-type languages. Do the NPs of such languages obligatorily project to a classifier phrase (CLP)? How about optional and non-classifier languages? More specific questions in this regard include why classifiers stand in complementary distribution with measure (M) and kind (Ki) terms. We will see in Section 2.3 that right-branching, left-branching, and hybrid analyses have been proposed for the internal constituency of classifier constructions; and in Section 2.4 that both unified and split analyses have been offered with respect to the relation between classifiers and measure terms.

One further issue that necessarily implicates studies on classifier constructions is the observation that classifier languages in general lack, or even reject, number marking on the noun in the presence of a numeral greater than *one*, as

seen by the sharp contrast between (obligatory or optional) classifier languages and non-classifier ones.

(2) Number marking

a. liang ge xuesheng(*-*men*) (Chinese, obligatory CL)
two CL student-PL
'two students'

b. iki tane öğrenci(*-*ler*) (Turkish, optional CL)
two CL student-PL
'two students'

c. two student*(-*s*) (English, non-CL)

The issue at hand here is the syntax and semantics of number marking in these three groups of languages. Drastically contrasting proposals have been made as to why this has to be the case. As we will see in Section 2.5, one line of argument, due to Link (1983), argues that number markers are interpreted on the noun, and that only plural nouns are compatible with numerals greater than *one*. At the other end of the discussion is Sauerland (2003), who argues that number markers are never directly interpreted on the noun but on the φP, which projects right above the DP; and that NP-attached number markers are reflexes of agreement. Wiltschko (2008), on the other hand, argues that languages vary crosslinguistically as to where in the nominal spine they realize their number markers. Number markers neither universally target the NP, nor are they always inflections. Potential loci for number markers in this model include noun roots (√), nouns (nP), Number Phrase (#P), Quantifier Phrase (QP), or DP; and they can be heads as well as phrasal adjuncts.

The aim of this thesis is to investigate syntactic and semantic properties of classifier constructions in Turkish. Four issues are addressed in particular: (i) the semantics of bare noun phrases (BNPs), (ii) the function of classifiers, (iii) the

syntactic constituency of classifier constructions, and (iv) number marking in classifier constructions. I specifically ask the following research questions:

(i) What do bare nouns (in their number-neutral, singular, and plural form) denote in Turkish?

(ii) What is the function of a classifier? How, if at all, does it affect the interpretation?

(iii) What is the internal constituency of classifier constructions?

(iv) Why can classifiers and measure terms never co-occur?

(v) How is number expressed in Turkish nominals syntactically and semantically? In particular, why do numerals greater than *one* reject co-occurrence with plural nouns?

The first and the second questions are addressed in Chapter 3, where I propose that bare nouns of Turkish denote <e,t>-type properties of both object and kind entities, i.e. they are ambiguous as to what sort of entity they denote. Classifiers, on the other hand, are relational elements of type <n, <e,t>> that mediate the co-occurrence of nouns with numerals. One crucial function of classifiers is to restrict the object/kind ambiguous domain of the noun to object individuals only, blocking reference to kinds. As for number, Turkish bare nouns come in three number-related forms semantically: number-neutral, singular, and plural; though number-neutral and singular forms are morphologically identical. The number-neutral form denotes all possible sets that can be constructed out of the individuals in the domain of the noun. Singular and plural act as modifiers, restricting the domain of the bare noun to atoms and sums respectively.

The third and the fourth questions are addressed in Chapter 4. Here, I propose that numerals, being of type *n*, denote just numbers. Therefore, they cannot act as modifiers on their own and thus fail to combine with nouns directly. Instead, they combine with classifiers and measure words, both μ-heads, to yield the μP, which denotes a measure expression of type <e,t>. The μP is then applied to the noun, either predicatively or attributively, and serves to measure it in terms of length, weight, volume, etc. as well as cardinality (CARD). Classifiers are argued to be overt spell-outs of the CARD value of the μP, while measure terms spell out other values. Since they target the same syntactic slot, classifiers and measure terms are mutually exclusive.

The answer to the fifth question comes in Chapter 5 where it is argued, in line with Sauerland (2003), that number marking in Turkish is only relevant for DPs. Sub-DP nominals, like μPs and NPs, lack number specification, always surfacing as number-neutral. Thus, they are distributionally restricted to contexts that handle number-neutral interpretations. DPs, however, obligatorily project to φP where their number features become visible. Therefore, referential and strongly quantificational DP elements can never be interpreted number-neutrally.

Concerning the incompatibility of nouns with numerals greater than *one*, I propose that μP can only combine with number-neutral nouns. It is argued that a number-neutral NP account is appealing for considerations of derivational economy, and demonstrated that this is indeed the case even in number-marking languages. In this regard, the difference between non-classifier languages (like English) on the one hand and obligatory or optional classifier languages (like Chinese and Turkish) on the other boils down to the observation that the number-neutral form is

morphologically identical to the singular form in Chinese and Turkish but to the plural in English.

While this thesis is primarily concerned with classifier constructions of Turkish, the analysis proposed will necessarily have crosslinguistic implications.

1.2 Theoretical framework

1.2.1 Minimalist Program

This thesis takes as a framework the Minimalist Program (MP), which is the latest incarnation of the Principles and Parameters (P&P) approach. In this model, language is taken to consist of a lexicon and a computational system. MP entertains the hypothesis that Universal Grammar (UG) is characterized by an optimal and computationally efficient design to satisfy the requirements of the external systems that the language faculty interfaces with: the articulatory-perceptual system (A-P), and the conceptual-intentional system (C-I). The output of the computational system is transferred to the external performance systems of A-P and C-I at two levels: Phonological Form (PF) and Logical Form (LF) respectively. Thus, language is argued to develop the properties that it currently has as a result of the requirement that the output of the computational system must be legible to these interpretive modules: A linguistic expression converges at the interfaces iff it contains legitimate PF and LF objects.

1.2.1.1 Economy

A natural extension of the hypothesis that UG is an optimal and computationally efficient design is the notion of economy, which guarantees that linguistic

derivations and representations are optimal in some sense (Chomsky, 1995; 1998). In general, economy favors the simplest and thus less computationally demanding operations, helping to reduce the burden on the computational system. For detailed discussion of economy in syntactic processes, see Collins (2003).

The notion of economy applies to the quantity of linguistic elements (substantive economy) as well as to the complexity of derivations (derivational economy). Substantive economy dictates that, by Occam's razor, linguists should dispense with linguistic categories unless they are absolutely necessary to explain linguistic phenomena. Thus, traces have been dispensed with, only to be replaced by the copies of the moved element; and movement itself has been reduced to a particular instantiation of Merge. Derivational economy, on the other hand, favors smaller structures over bigger ones, and shorter steps over longer ones. Thus, agreement phrases have been dispensed with altogether, and all agreement phenomena have come to be handled under already available Spec-Head configurations.

Considerations of economy will become most relevant for the discussion in Chapter 5 where I address number marking in Turkish classifier constructions. A long-held position in linguistic literature is that the form of a noun must be compatible with the numeral; thus, singular nouns occur with *one*, plural nouns occur with numerals greater than *one*. I propose, in contrast, that for reasons of derivational economy, numerals (more specifically μPs) exclusively combine with number-neutral nouns in all cases, even when the numeral is greater than *one*. This is because a number-neutral noun is just as compatible with numerals greater than *one* as plural nouns are. Consequently, derivational economy favors number-neutral forms of nouns as they contain less structure.

1.2.1.2 Full Interpretation

A number of constraints have been proposed to ensure that economy is achieved. One such constraint is the principle of Full Interpretation (FI). Chomsky (1986) argues that every element of the derivation must receive an appropriate interpretation at the levels of PF and LF, or the derivation crashes at the relevant interface.[1] Thus, every linguistic expression must come in form-meaning pairings so that PF can phonetize them, and LF can assign interpretations to them. The expressions in (3), for instance, cause the derivation to crash because PF cannot assign a phonetic representation to *lbinked* in (3a), and LF cannot interpret *the man* in (3b).

(3) a. *Bill *lbinked* his eyes.

b. *Bill wrote a report yesterday [*the man*].

FI requires that every object in the derivation be licensed during the derivation; they cannot simply be disregarded to save the expression. NPs are licensed through their thematic relation to the predicate, and movements are licensed by the need to check certain formal features. Licensing helps eliminate uninterpretable features from the derivation before it reaches the interfaces.

FI will become particularly relevant in Chapter 3, where I discuss the function classifiers in languages that express them overtly. Contra Zhang (2011a), who argues that at least some classifiers in Chinese are place holders serving no

[1] This is at best an idealization, as there are linguistic elements interpretable to PF but not LF, or vice versa. A case in point is the status of expletives like *it* in (i).

(i) *It* is likely that John may never arrive in time.

In this example, *it* does not receive an interpretation at LF. It is only inserted as a Last Resort operation to satisfy EPP, which requires that the subject position of a sentence cannot be left empty.

semantic function at all, I demonstrate in Chapter 3 that classifiers always act as restrictive modifiers that reduce the two-way (object/kind) ambiguous reference of the noun to object individuals only. Then in Chapter 4, I illustrate how this line of reasoning helps explain some intriguing properties of multiple classifier constructions (MCLCs) and the behavior of a set of non-canonical nouns whose domain includes more/less than kind and object individuals.

1.2.1.3 Feature checking

Recall that by FI, all that is present in a linguistic expression has to be interpretable by the interface levels, including linguistic objects as well as their features. The problem is that linguistic objects come into the derivation with a number of features, some of which interpretable by the interfaces and others not. To guarantee full interpretability, those uninterpretable features must be somehow eliminated from the structure before the derivation reaches the interfaces. This elimination is taken care of by what is referred to as the process of feature checking (Chomsky, 2000; 2001a).

Feature checking occurs between a Probe and a Goal through a mechanism called Agree. Details aside, if some uninterpretable feature on the Goal matches an interpretable one on the Probe, Agree is established and the uninterpretable feature becomes invisible at LF.[2] Subject DPs for instance have interpretable φ-features and uninterpretable Case features. Thus, they move to [Spec, TP] where they meet the identical but uninterpretable φ-features of T. Under identity with their interpretable counterparts, the uninterpretable φ-features of T get deleted and consequently cease to raise interpretability issues at LF.

[2] Whether the probe or the goal has uninterpretable features is a matter of debate. Although the general consensus is that the probe has uninterpretable features, Pesetsky and Torrego (2007) propose that both the probe and the goal can have interpretable and uninterpretable features.

Feature checking will become relevant for our discussion in Chapter 5 where I address the issue of number marking in Turkish classifier constructions. Classifier languages tend to reject number markers in the context of numerals greater than *one*. This has mistakenly led some linguists, most notably Chierchia (1998a; 1998b), to argue that nominals of classifier languages denote in the kind domain and thus have some sort of a mass denotation, lacking number differentiation. Because classifier languages only have mass nouns, they necessarily reject plural markers. I argue in contrast that Turkish does have number specification but that, as Sauerland (2003) proposes, it is only assigned to DPs. More specifically, number features of Turkish nominals are located in φP that projects above the DP. All sub-DP nominals of Turkish simply lack number specification, subsequently arising as number-neutral. Accordingly, number features on nouns, when they occur, arise as reflexes of agreement with the φP. Thus, nominals of classifier languages like Turkish do express number marking, but are restricted to well-defined contexts.

1.2.1.4 Uniformity principle

Uniformity Principle (UP) as stated by Chomsky (2001a) dictates that "in the absence of compelling evidence to the contrary, assume languages to be uniform, with variety restricted to easily detectable properties of utterances (p. 2)." In accordance with UP, crosslinguistic variation is taken to be restricted to properties of functional categories. Thus, all languages have wh-movement overtly or covertly, the difference being that the categorial wh-feature on the so-called wh-in-situ languages is weak, obviating the need for overt movement.

The upshot of UP is that all languages are identical except some trivial differences. Among the many forms of UP, what immediately concerns us are

Interface Uniformity (IU) and Categorial Uniformity (CU). IU, which regulates syntax-semantics mapping, is the hypothesis that sentences with the same interpretation have the same underlying syntactic representation. Thus, a controlled infinitival complement like *Bill wants* [PRO *to attend the meeting*] is taken to have an unpronounced subject PRO based on its interpretive identity with a regular infinitival complement like *Bill wants* [*Jane to attend the meeting*] in which the subject is overt. CU, on the other hand, is the assumption that "all expressions of the same type belong to the same category" (Radford, 2009, p. 114). By CU, all declarative sentences, whether or not they contain an overt complementizer, are CPs both within a language and crosslinguistically.

Specific reference to UP will be made in Chapter 4 where the constituency of classifier constructions is discussed. It is proposed that, given the interpretive identity between a [Numeral-NP] construction in non-classifier languages like English and a [Numeral-CL-NP] construction in optional and obligatory classifier languages like Turkish and Chinese, the underlying syntax must also be identical, leading to the conclusion that CL/non-CL contrast is only apparent. This line of reasoning will be supported by data from English indicating that in the absence of a classifier-like element, the construction becomes two-way (object/kind) ambiguous as in the case of classifier languages.

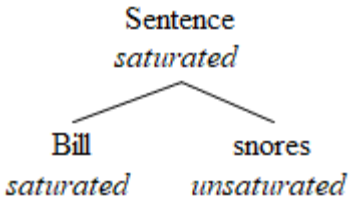
1.2.2 Principle of semantic compositionality

The principle of semantic compositionality, also known as the Frege's principle as Gottlob Frege is credited for its initial formulation, states that the meaning of a complex expression is determined by the meaning of its constituent parts and the rules for putting them together, i.e. the way they are structurally organized.

According to Frege, linguistic expressions come in two forms: (i) arguments, which are saturated objects that can receive interpretation independently, and (ii) functions, which are unsaturated objects and thus require the presence of other expressions to complete their meaning. In this view, the meaning of a sentence is the result of function application, i.e. applying the unsaturated part of a sentence (the function) to the saturated part (the argument).

(4) Function application

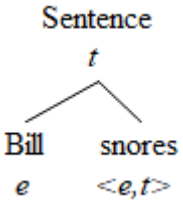
Bill snores.



The principle of semantic compositionality requires a tight correspondence between syntactic categories and semantic types. Types come in two forms: simple basic types and complex functional types. Basic types correspond to saturated objects; *e* for individuals like *Bill*, and *t* for expressions that have truth values, i.e. sentences like *Bill snores*. Functional types correspond to unsaturated objects, including intransitive verbs of type <e,t> like *snores* and determiners of type <<e,t>, e> like *the*. The function takes the first element in the angle bracket as the input and returns the second one as its output. Thus, an intransitive verb like *snores* takes an *e*-type argument as its input and returns a *t*-type sentence as its output. In other words, *snores* is a function from individuals of type *e* to truth values of type *t*.

(5) Semantic types

Bill snores.



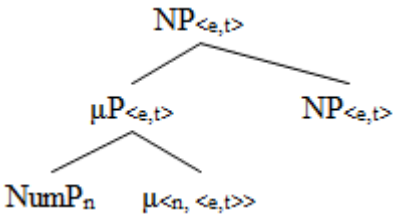
Details aside[3], the principle of semantic compositionality states that the relation between syntax and semantics is compositional. We know what *Bill snores* means because we know what the words *Bill* and *snores* mean, and we also know what kind of interpretation results when we combine these expressions in a specific way. This is an intuitive principle given that speakers of a language can construct and understand an infinite number of expressions despite the fact that both the linguistic elements and the rules for combining them are limited. Thus, by retrieving the meanings of linguistic elements from the lexicon, and by decoding the rules used to combine them, we are able to deduce what interpretation(s), if any, can be assigned to an expression.

Recall from Section 1.1 that classifier constructions consist minimally of a numeral, a classifier, and a noun. In line with the principle of semantic compositionality, our task in Chapter 4 will be to explain what each component denotes in the construction, how they are structured in syntax, and what kind of an interpretation obtains at LF. Following the general wisdom, I propose that nouns in Turkish denote <e,t,>-type predicates. Numerals, on the other hand, denote natural numbers, and thus are associated with the type *n*, i.e. they are saturated objects. Classifier and measure words, however, are relational elements, denoting functions

[3] See Pelletier (1994) for a discussion of arguments for and against the principle of semantic compositionality.

from *n*-type natural numbers to <e,t>-type predicates. Therefore, classifiers must be <n, <e,t>>-type objects which take a numeral as input and return an <e,t>-type measure phrase as output, which is then applied to another <e,t,>-type noun using standard mode of composition.

(6) Semantic composition in CLCs



As it stands, this is in line with Krifka's (1995) argument that the contrast between CL- and non-CL languages lies not in their nominals but in their numerals.

1.3 Properties of classifier constructions

In this section, I discuss some properties of classifier constructions that an adequate theory needs to account for. Ideally, these properties should follow from the analysis proposed without additional stipulations. Most of the data I address in this section comes from representative languages of Chinese (obligatory CL), Turkish (optional CL), and English (non-CL). As the discussion unfolds, reference will be made to other languages to highlight their crosslinguistic ubiquity.

1.3.1 Typology

Languages differ as to whether they allow their nominals to directly combine with a numeral. Obligatory classifier languages like Chinese and Japanese require a classifier to mediate the [Numeral-NP] combination; optional classifier languages

like Turkish and Armenian allow but do not require a classifier, while English type non-CL language lack such elements altogether.

(7) CL typology

a. liang *(*ge*) ren (Chinese, obligatory CL)
two CL person
'two persons'

b. iki (*tane*) öğrenci (Turkish, optional CL)
two CL student
'two students'

c. two students (English, non-CL)

It is worth noting at this conjecture that the so-called non-CL languages actually do have many specific classifiers, like the word *head* in "two head cattle", and *ball* in "a ball of cabbage" (Lehrer, 1986). As it stands, it is the availability of a 'general' classifier like Chinese *ge* and Turkish *tane* and that sets apart classifier languages from non-classifier ones. Yet, such expressions are not obligatory in English, at least not part of a generalized classifier system, and the discussion is centered around what makes them obligatory in Chinese type languages.

As a general rule of thumb, classifiers are banned in idioms and derivational contexts like compounding.

(8) a. san(**ge*)-jiao-guanxi (Chinese, obligatory CL)
three CL angle relation
'triangle relation'

(Zhang, 2011a, p. 23)

b. beş (**tane*) yıldız-lı otel (Turkish, optional CL)
five CL star-DRV hotel
'a five-star hotel'

Under the reasonable assumption that idiom formation and compounding are pre-syntactic whereas classifiers are functional elements (Zhang, 2011a), such a distribution comes as no surprise.

1.3.2 Number marking

Another issue that has attracted a lot of attention is the syntax and semantics of number marking on nominals. Although number marking is a separate issue in itself, it tends to interact with classifiers in predictable ways. In classifier languages, nouns typically reject plural markers and must appear in the bare form when they combine with numerals. This is the case in Chinese and Turkish.

(9) a. liang ge ren(*-*men*) (Chinese, obligatory CL)
two CL person-PL
'two persons'

b. üç tane öğrenci(*-*ler*) (Turkish, optional CL)
three CL student-PL
'three students'

b'. üç öğrenci(*-*ler*)
three student-PL
'three students'

It has been argued that classifiers and number markers stand in complementary distribution, serving to divide a mass nouns into countable units (Borer, 2005). This is partly based on the observation that, in Armenian, a [Numeral-NP] construction is compatible with a classifier as well as with a plural marker, but not with both.

(10) a. yergu *had* hovanoc (Armenian)
two CL umbrella
'two umbrellas'

b. yergu hovanoc-*ner*
two umbrella-PL
'two umbrellas'

c. *yergu *had* hovanoc-*ner*
two CL umbrella-PL
Int.: 'two umbrellas'

(Borer, 2005, p. 95)

In Turkish, however, plural markers cannot co-occur with numerals even in the absence of an overt classifier. (9b') thus casts doubt on the argument that classifiers and plural markers serve the same function. In Persian, another optional classifier language, plural markers can co-occur with classifiers as in (11a'), aberrantly violating the purported complementarity constraint; and worse yet, they can only combine with a numeral if an overt classifier is also present (cf. (11b')).

(11) a. bist *ta* sarbaz (Persian, optional CL)
twenty CL soldier
'the twenty soldiers'

a'. bist *ta* sarbaz-*ha*
twenty CL soldier-PL
'the twenty soldiers'

b. bist sarbaz
twenty soldier
'twenty soldiers'

b'. *bist sarbaz-*ha*
twenty soldier-PL
Int.: '(the) twenty soldiers'

(Hamedani, 2011, p. 153)

Put briefly, plural marking in classifier languages is a complex issue implicating morpho-syntax and semantics of number marking that goes beyond classifier languages, and has spurred wide and varied theories.

1.3.3 Interaction with measure terms

Unlike classifiers, measure words are common in world languages. Yet, classifiers seem to stand in complementary distribution with them. Generally speaking, when a measure expression is used, classifiers are banned. Almost all languages that I know of follow this pattern.

(12) a. liang (**ge*) bei shui (Chinese)
two CL cup water
'two cups of water'

b. iki (**tane*) bardak su (Turkish)
two CL cup water
'two cups of water'

Considering that measure words generally divide mass into countable units while classifiers are considered to be semantically vacuous (Her & Hsieh, 2010), such a correlation is rather curious. Further, unlike measure words, classifiers have been argued to form a (semi-)closed class, which is unexpected of items standing in a paradigmatic relation. As we will see in Section 2.4, this observation has spurred a lot of debate, leading some to treat classifiers and measure expressions as two sides of the same coin and others to treat them distinctly.

1.3.4 Constituency

Another interesting property of classifiers is that they seem to have a tighter relation with the numeral than the noun, first observed in Greenberg's (1974) pioneering work. Thus, under extraposition, they stick with the numeral.

(13) a. Haksyang [sye *meyng*-i] o-ass-ta. (Korean, obligatory CL)
student three CL-NOM come-PST-DECL

a'. [Sye *meyng*-uy] haksyang-i o-ass-ta.
three CL-GEN student-NOM come-PST-DECL

Both: 'Three students came.'

(Lee, 2013, p. 256)

b. [Üç *tane*] öğrenci gel-di. (Turkish)
three CL student come-PST

b'. Öğrenci gel-di [üç *tane*].
student come-PST three CL

Both: 'Three students came.'

c. *[*Tane* öğrenci] gel-di üç.

Some accounts take this to indicate that classifiers are required because of the properties of numerals, not those of nouns, and assign them a left branching structure (see Section 2.3.2).

1.3.5 Selection

As already mentioned, what differentiates classifier languages from non-CL ones is probably the availability of a *general* classifier. However, alongside general classifiers like Turkish *tane* or Chinese *ge*, classifier languages also have a number of *specific* classifiers that can only be used with nouns denoting certain semantic properties like shape, animacy, and function. In a sense, the classifier selects a semantic class of nominals it occurs with. In Turkish, the classifier *baş* 'head' can only be used with nouns denoting some domestic animals, and some round-shaped vegetables (14a-a') whereas *tel* selects nouns denoting long thin objects (14b-b').

(14) a. yirmi {*baş* / *tane*} sığır (Turkish)
twenty $CL_{specific}$ $CL_{general}$ cow
'twenty cows'

a'. yirmi {*baş / tane} ev
twenty $CL_{specific}$ $CL_{general}$ house
'twenty houses'

b. iki {tel / tane} saç
two $CL_{specific}$ $CL_{general}$ hair
'two single hairs'

b'. iki {*tel / tane} masa
two $CL_{specific}$ $CL_{general}$ table
'two tables'

As can be seen in (14), the *specific* classifier can always be replaced with the *general* one, but not vice versa. Other Turkish specific classifiers include *tur/el* 'lap' (for games), *el* 'shot' (for gunfire), *dal* 'fag' (for cigarettes), *yaprak* 'sheet' (for paper).

Specific classifiers abound in CL- as well as non-CL-languages. The mere existence of such elements has led some linguists to conclude that classifier constructions must have right branching structures in which the classifier c-commands the noun so as to select it.

So far, we have seen selection of the noun by the classifier; but selection can also apply between the numeral and the classifier. In Persian, for example, *yek* 'one' rejects co-occurrence with a classifier.

(15) yek (*ta) danešju (Persian)
one CL student
'one tree'

(Gebhardt, 2009, p. 212)

cf. car ta deraext
four CL tree
'four trees'

(Gebhardt, 2009, p. 216)

Likewise, in Chol, some native numerals require classifiers while Spanish-borrowed numerals totally reject them (Bale & Coon, 2014). Thus, selection is an

essential property of classifier constructions, and might shed light on their internal constituency.

1.3.6 Indefiniteness

Perhaps the most underrated aspect of classifiers is the way they interact with the indefiniteness of the noun. Classifiers typically accompany nouns when their referent is first introduced in the discourse (Aikhenvald, 2003). Hopper (1986, p. 320) notes that classifiers in Malay accompany a newly introduced referent as it is being "presented for deployment", typically with subjects of verbs meaning *come*, *be seen/sighted*, or *there is/are*. Nouns referring to already introduced referents, however, are almost never classified. Erbaugh (1984) makes a similar observation for Chinese: Specific classifiers mark the first mention of a new discourse referent, and thus tend to occur with indefinite NPs. Once reference is established, subsequent mentions either use the general classifier *ge* or no classifier at all (p. 408). Öztürk (2005, p. 29) similarly observes that in Turkish the general classifier *tane* "does not individuate but makes it possible to refer solely to the number or the quantity".

(16) a. *Üç öğrenci* kek-i ye-di: John, Tom ve Bill.
three student cake-ACC eat-PST John Tom and Bill
'Three students ate the cake: *John, Tom and Bill.'

b. Kek-i *üç tane öğrenci* ye-di: *John, Tom ve Bill.
cake-ACC three CL student eat-PST John Tom and Bill
'Three students ate the cake: *John, Tom and Bill.'

(Öztürk, 2005, p. 29)

Not all native speakers of Turkish share the Öztürk's (2005) judgement. Still though, this idiolectal variation demonstrates that, as (16b) shows, the presence of *tane* makes it impossible for some speakers to list the names of the individuals who ate the cake, while no such restriction holds in the CL-lacking (16a). Öztürk (2005)

concludes, based on this set of facts, that the classifier constructions lack referential power. If so, the observation that classifiers pragmatically serve to mark the first mention of discourse entities is also attested in Turkish idiolectally.

On the other hand, classifiers in Turkish are ruled out in demonstrative constructions, and are degraded grammatically in relative clauses.

(17) a. Bu (**tane* / **baş*) sığır kimin? (Turkish)
this $CL_{general}$ $CL_{specific}$ cow whose
'Whose is this cow?'

b. [$_{RC}$ Hoca-nın ver-diğ-i] üç (?*tane*) makale-yi oku-du-n mu?[4]
teacher-GEN assign-NOML-POSS CL article-ACC read-PST-2SG QUES
'Have you read the three articles that the teacher assigned?'

The ungrammaticality of (17a) is no surprise given that such classifiers are only used in the presence of a numeral, hence the term numeral classifier (Aikhenvald, 2003). (17b) is more telling in that even with the numeral, classifiers degrade grammaticality in specific contexts.

[4] Such constructions are actually grammatical under a partitive reading. When a classifier occurs in a definite context, like definite-biased subject positions and relative clauses, it automatically shifts the construction into a partitive interpretation.

(i) a. *Üç tane* kitap burda. (subject position)
three CL book here

i. * 'There are three books here.'
ii. * 'The three books are here.'
iii. 'Three of the books are here.'

b. Polis [$_{RC}$ *pro* durdur-duğ-u *üç tane* sürücü-yü] cezalandır-dı$_i$(RC)
policeman stop-NOML-3SG.POSS three CL driver-ACC fine-PST

i. * 'The policeman fined the three drivers that he stopped.'
ii. 'The policeman fined three of the drivers that he stopped.'

This lends further support to Hopper (1986) and Erbaugh's (1984) argument that the presence of a classifier signals the lack of a DP layer since they mark the first mention of newly introduced discourse entities. As I will demonstrate in the upcoming chapters, however, Turkish does allow classifiers in definite contexts, and argue in Section 5.2.2 that the partitive reading in (i.b) follows from the DP status of *sürücü* 'driver' induced by the stage-level predicate *durdur*- 'stop'.

This is not cross-linguistically valid, however. Cheng and Sybesma (1999) note that Cantonese uses what is referred to as a *deictic classifier* to encode definiteness.

(18) a. Wufei jam-jyun *(*wun*) tong la. (Cantonese)
Wufei drink-finish CL soup SFP
'Wufei finished the soup.'

b. *Zek* gau gamjat dakbit tengwaa.
CL dog today special obedient
'The dog is especially obedient today.'
(Cheng & Sybesma, 1999, p. 510)

Chan (1999), too, observes that a demonstrative alone cannot bind the NP in Cantonese, making the use of a classifier obligatory.

(19) go2 *(*go3*) jan4 (Cantonese)
DEM CL person
'that person'
(Chan, 1999, p. 233)

Note that these constructions all lack a numeral, which stands in sharp contrast to Turkish. At this point, it is not clear whether general classifiers can also occur in definite constructions. The bottom line though is that the distribution of a numeral classifier is largely restricted to non-specific contexts in a majority of classifier languages.[5]

1.3.7 High numerals

Another property of classifier constructions is that, in obligatory classifier languages like Chinese, the classifier can actually be dropped when the number is large or vague. This is typically the case with numbers that are multiples of 100.

[5] See Zhang (2011a) for counterarguments, though.

(20) a. Liu-yi (*ge*) funü cheng ban-bian tian. (Chinese)
six-billion CL woman support half-part heaven
'Six billion women take half of the responsibilities of the world.'

b. Wu-qian-wan (*ge*) jiaoshou touzi gupiao.
5-1000-10000 CL professor invest stock
'Fifty million professors invest in stocks.'

cf. liu-yi ling san *(*ge*) funü
six-billion zero three CL woman
'six billion and three women'

(Zhang, 2011a, p. 24)

Aikhenvald (2003) points to the crosslinguistic ubiquity of this pattern. The Austronesian language of Minangkabau requires the use of a classifier with numerals up to three but not others; in Nung (Thai) and Burmese, classifiers are optional with multiples of ten; while in Thai, classifiers are not used with large numbers like *hundred* and *thousand*, unless individuation is implied (Aikhenvald, 2003, p. 100). Thus, high, vague, and round numerals somehow make the use of a classifier optional, which begs the question why.

1.3.8 Pronominalization

Another interesting property of Turkish classifiers discussed in Schroeder (2007) is that they can act as pro-forms in partitive phrases without a lexical head. In such constructions, the classifier may or may not be possessive-marked.

(21) Altı tane bilya-m var. Dört *(*tane*) __ sen-in ol-sun.
seven CL marble-1SG.POSS exist. Four CL __ you-GEN be-OPT
'I have six marbles. Three shall be yours.'

Schroeder (2007) argues that this results from Turkish quantifiers not having referential properties themselves. Therefore, either a classifier is used as a pro-form, or the possessive marker *–(s)I* has to be attached to the QP to "referentialize" it.[6]

(22) bilya-lar-dan üç*(-ü / *tane(-si)*)
marble-PL-ABL three-POSS CL-POSS
'three of the marbles'

In short answers to questions, however, the classifier can actually be elided together with the noun.

(23) A: Kaç tane bilya-n var? B: Üç.
how many CL marble-2SG.POSS exist three
'How many marbles do you have?' 'Three.'

In languages like Chinese, on the other hand, the general classifier *ge* can actually take a specific classifier as antecedent.

(24) cong nei bian guolai yi.ge xiao hai-zi, uh, . . . qí, qí,
from there over come one.$CL_{general}$ small child uh,… ride, ride,

qí.zhe yi-liang jiaotache uh shi yi.*ge* hen keai.de
ride.PROG one-$CL_{specific}$ bicycle uh be one.$CL_{general}$ very cute.MOD

xiao.de jiaotache.
little.MOD bicycle.

'From over there comes a child, uh, ride, ride, riding a $CL_{specific}$ bicycle, uh, (it) is a $CL_{general}$ very cute little bicycle.'

(Aikhenvald, 2003, p. 324)

[6] See von Heusinger and Kornfilt (2017) for conditions on case marking in partitives, the ellipsis of the nominal head in these constructions, and the role of classifiers in such processes.

1.3.9 Strong vs weak quantifiers

Classifiers are compatible with all numerals in Turkish, but not with all quantifiers. Some accept while others reject them.

(25) a. Numerals

{bir / iki / üç / … / yüz kırk altı} *tane* makale
one two three … hundred forty six CL article
'{one / two / three / … / hundred and forty-six} articles'

b. Quantifiers

{kaç / birkaç / üçbeş} *tane* makale
how many a.few several CL article
'{how many / a few / several} articles'

b'. {her / hiç / bazı / az / çok / çoğu / bütün} (**tane*) makale
every no some few many most whole CL article
'{every / no / some / few / many / most / whole} article(s)'

In Chinese, cardinal numerals, ordinal numerals, and quantifiers such as *ji* 'how many', *ji* 'a few/several', *haoji* 'several', *ruogan* 'several', *liang-san* 'a few', and *ge* 'each' require classifiers (26a), while quantifying elements such as *daliang* 'a lot', *suoyou* 'all', *quanbu* 'all', *daduoshu* 'most', *dabufen* 'most' reject them (26b).

(26) a. {san / di san / ji / haoji / liang-san} *(*duo*) hua
three ORD three how.many several two-three CL flower
'{three / the third / how many / several / a few} flower(s)'

b. {suoyou / daliang / daduoshu} (de) (**duo*) hua
all a.lot most DE CL flower
'{all / a lot / most} flowers'

(Zhang, 2011a, pp. 35-36)

Following Hsieh (2008), Zhang (2011a) argues that the contrast follows from the status of the two groups of quantifiers in question: Those in the first group occupy the head or Spec position of a Number Phrase (NumP) and provide quantity specification, while those in the second group are NP modifiers, providing no direct

quantity specification. Since modifiers merge with the noun directly, no classifier is required in the first group. Zhang (2011a) takes the optional presence of DE in (26b) as evidence for the modifier status of these quantifiers.

It has also been suggested that quantifiers like *every, all, most, none, some* differ from those like *several, a few, many* in that the former are proportional in nature establishing relations between two sets, while the latter are cardinality expressions. This reasoning more or less predicts the above distribution, except that Chinese ordinal numbers and *man* 'whole' require classifiers while their Turkish counterparts reject them. Further, Chinese *henduo* 'many/a lot' optionally allows a classifier. Thus, an account based on proportionality alone may not be sufficient, suggesting that lexical processes like selection may be at work.

1.4 Earlier studies on Turkish classifier constructions

Unfortunately, Turkish classifier constructions have not received due attention in the literature, except for a few mentions in descriptive grammars. The majority of those analyses focus primarily on the numeral classifier *tane,* analyzing it in relation to, or under the title of, measure words. Göksel and Kerslake (2005), for example, state that *tane* and *adet*, which they call "enumerators", are used with nouns denoting discrete, non-human entities (p. 183).[7] They also follow other descriptive grammars of Turkish including Underhill (1976) and Kornfilt (1997) in analyzing classifiers with reference to measure and kind words.

In this section, I review three works that have some bearing on Turkish classifier constructions, and elaborate on their strengths and weaknesses.

[7] But this position is definitely too strong. All the native speakers I have consulted judge constructions involving *tane* as grammatical with all nouns, while *adet* is only grammatical with inanimate nouns.

1.4.1 Schroeder (2007)

Schroeder (2007) discusses two specific issues concerning the Persian-borrowed *tane*: its function, and its use in spoken discourse. Since the purpose of my study is the syntax and semantics of classifier constructions in general, I will not go into the details of his work here. However, I would like to take the opportunity to raise some criticisms at this point.

Considering the function of *tane*, Schroeder assumes, with Serzisko (1980), that numeral classifiers do two main jobs: (i) "they classify the NP according to semantic criteria", and (ii) "they quantify the noun by constituting distinct entities out of its transnumeral content" (p. 474). As for the first function, he does not unfortunately go into detail as to what he means by semantic classification, but he presumably points to the selectional restrictions the classifier imposes on the noun. We have, however, seen in Section 1.3.5 that unlike specific classifiers, general ones do not impose such restrictions. Given that Schroeder specifically addresses the general classifier *tane*, it is a mystery why he makes that assumption. As for the second function, there is ample evidence supporting the fact that the noun in classifier constructions is indeed number-neutral, i.e. transnumeral. I will discuss the relevant data in Chapter 3.

Further, Schroeder argues that "*tane* is rarely used in quantifier phrases where the number exceeds twenty […] and when the quantifier phrase denotes an approximate number, i.e. when two cardinals following each other are joined to give an approximate idea of the extension of quantity" (p. 478). Both observations are too strong, as the grammaticality of (27) shows.

(27) a. A: Sınav-a kaç öğrenci gir-di? B: 40 *tane* falan.
exam-DAT how.many student take-PST 40 CL about
'How many students took the exam?' 'About 40.'

b. üçbeş *tane* hata yüzünden
three.five CL error due.to
'due to a few errors'

Rather than being rarely used with high numbers, it is the case that high numbers facilitate the conditions that allow dropping of the classifier (see Section 1.3.7). I follow Nomoto (2013) in proposing that this is related to the object accessing function of classifiers (see Section 3.3.2).

In short, Schroeder points out some functions of *tane* in spoken discourse but does not discuss how the semantics of these constructions is derived, which is precisely what I intend to do in this dissertation.

1.4.2 Sağ (2018)

A recent work on Turkish classifier constructions comes from Sağ (2018), who makes a number of controversial claims regarding the semantics of Turkish bare nouns and the function of the general CL *tane*. In what follows, I review them one by one.

Claim 1: Turkish plural nouns are semantically number-neutral.

Sağ argues, quite controversially, that Turkish plural nouns are semantically number-neutral, as has been argued for English bare plurals in Krifka (2004; 2003), Sauerland, Anderssen, and Yatsushiro (2005), Spector (2007), and Zweig (2009). Sağ goes on to argue that non-PL marked nouns of Turkish are exclusively singular. This goes against a vast body of literature establishing the fact that Turkish bare nouns are number-neutral (Lewis G. L., 1967; Göksel & Kerslake, 2005; Öztürk,

2005; Acquaviva, 2005; Rullmann & You, 2006; Schroeder, 2007; Bale, Gagnon, & Khanjian, 2011a; Görgülü, 2012).[8]

Let us briefly review Sağ's reasoning. Part of her position is theory-internal. She follows Ionin and Matushansky (2006) in assuming that numerals are modifiers of type <<e,t>,<e,t>> that can only combine with atomic properties. Since Turkish numerals can only combine with non-PL-marked nouns, Sağ concludes that morphologically bare nouns of Turkish must correspond to semantically singular ones.

Sağ adduces several pieces of evidence for her argument. First, she proposes, as does Kan (2010), that very much like their English counterparts, Turkish bare plurals are number-neutral in downward entailing contexts (questions, negatives, and conditionals); and that their strict plural reading in positive sentences arises as a result of scalar implicature in the sense of Spector (2007). She provides the following examples that purportedly prove her point.

(28) a. Question

Orman-da *ayı-lar-a* rastla-dı-nız mı?
forest-LOC bear-PL-DAT come.across-PST-2PL QUES
'Have you come across bears in the forest?'

b. Negative

Çocuk-lar sokak-ta top oyna-mı-yor.
child-PL street-LOC ball play-NEG-IMPF
'Children are not playing ball in the street.'

c. Conditional

Erkek-ler tarafından aldat-ıl-dı-ysan, biz-e katıl-abilir-sin.
man-PL by cheat-PASS-PST-COND we-DAT join-ABIL-2SG
'If you have been cheated on by men, you can join us.'

[8] But see Renans et al. (2017) for experimental evidence against this position.

d. Positive

Çocuk-lar sokak-ta top oyn-uyor.
child-PL street-LOC ball play-IMPF
'Children are playing ball in the street.'

Here, (28a-c) are presented as examples in which the PL-marked noun is number-neutral, which I believe is utterly mistaken. Almost all native speakers of Turkish I consulted with judge (28a) as degraded, and to the extent that it is grammatical, it only receives a plural interpretation. In fact, they immediately offer the non-PL version in (29).

(29) Orman-da *ayı-ya* rastla-dı-nız mı?
forest-LOC bear-DAT come.across-PST-2PL QUES
'Have you come across bears in the forest.'

Likewise, (28b) is only grammatical under a definite and exclusively plural interpretation, and thus cannot take scope under negation as Sağ claims. (28c), on the other hand, is perfectly grammatical under a number-neutral interpretation. This, I believe is due to Animacy Effect. For not quite well understood reasons, animate nouns of Turkish are much better with a kind reference than inanimate ones, which reject kind reference.[9] Thus in (30), plural inanimate nouns result in ungrammaticality when number-neutrality is intended.

(30) a. Televizyon(*-*lar*) yüzünden geç yat-ıyor-sa-n, izle-me.
television-PL due.to late sleep-IMPF-COND-2SG watch-NEG
'If you sleep late due to televisions, do not watch.'

b. Çocuğ-unuz film(*-*ler*) sebebiyle çalış-mı-yor-sa engelle-yin.
child-2SG movie-PL due.to study-NEG-IMPF-COND prohibit-2SG
'If your child does not study due to movies, prohibit them.'

[9] See Section 3.3 for a detailed analysis of kind reference in Turkish.

In fact, the prototypical number-neutral quantifier in Turkish is *hiç* 'any', which exclusively combines with non-PL-marked nouns.

(31) a. Orman-da *hiç* {ayı-ya / *ayı-lar-a} rastla-dı-nız mı?
forest-LOC any bear-DAT bear-PL-DAT come.across-PST-2PL QUES
'Have you come across any bears in the forest?'

b. Bugün ders-e *hiç* öğrenci(*-ler) gel-me-di.
today class-DAT any student-PL come-NEG-PST
'No student came to class today.'

c. *Hiç* {çocuğ-unuz / *çocuk-lar-ınız} var-sa söyle-yin.
any child-2PL.POSS child-PL-2PL.POSS exist-COND say-2PL.IMP
'Tell me if you have children.'

Further, an argument based solely on downward entailing contexts is misleading. In Hungarian, non-PL marked nouns are interpreted number-neutrally in the object position (32a); and they also appear with numerals greater than *one* (32b). These pieces of data strongly suggest that Hungarian patterns with Turkish in having number-neutral bare nouns.

(32) a. János *level*-et írt.
John letter-ACC wrote
'John wrote {a letter / letters}'
(Csirmaz & Dékány, 2014)

b. három *gyerek*(*-ek)
three child-PL
'three children'
(Farkas & de Swart, 2010)

Bare plurals, however, can still appear in downward entailing contexts, with a number-neutral reading.

(33) a. Láttál valaha *lov-ak*-at?
see.PST.2 ever horse-PL-ACC
'Have you ever seen horses?'

b. Anna nem látott *lov-ak*-at.
Anna not see.PST horse-PL-ACC
'Anna hasn't seen horses.'

c. Ha láttál valaha *lov-at*-at, szólj.
if see.PST.2 ever horse-PL-ACC say
'If you have ever seen horses, say so.'

(Farkas & de Swart, 2010)

Farkas and de Swart (2010) note that these plural forms are pragmatically inappropriate unless the intended referents include sums alongside atoms. Thus, although *çocuklar* 'children' in (34a) is marginally acceptable under a number-neutral interpretation, *babalar* 'fathers' in (34b) is not.

(34) a. ?*Çocuk-lar*-ın var mı?
child-PL-2SG.POSS exist QUES
'Do you have children (one or more)?'

b. **Baba-lar*-ın var mı?
father-PL-2SG.POSS exist QUES
'Do you have fathers (one or more)?'

This is because, since no person can possibly have more than one father, sums reference is excluded in principle in (34b), yielding the ungrammaticality. Such examples conclusively establish the fact that the primary function of a plural noun in Turkish is to refer to sums, and that their concomitant reference to atoms in downward entailing contexts should not be taken at face value.

Therefore, Sağ's argument that Turkish bare plurals are number-neutral is untenable, as her analysis is exclusively based on the effect of not-so-helpful downward entailing contexts, not to mention that, even so, unmarked nouns fare much better than plural ones.

Claim 2: Turkish plural nouns have kind, generic, and existential interpretations.

Sağ goes on to argue that Turkish plural nouns can receive kind, generic, and existential readings, patterning with their English counterparts.

(35) a. *Dinozor-lar* 66 milyon 38 bin yıl önce yok ol-du. (kind)
dinosaur-PL 66 million 38 thousand years ago extinct be-PST
'Dinosaurs became extinct 66 million 38 thousand years ago.'

b. *Ayı-lar* genelde saldırgan ol-ur. (generic)
Bear-PL generally aggressive be-AOR
'Bears are generally aggressive.'

c. *Kedi-ler* dışarıda çiftleş-iyor. (existential)
cat-PL outside mate-IMPF
'Cats are mating outside.'

Once again, she only tests her hypothesis with animate nouns, which I have argued to pattern differently from inanimate ones, not to mention that (35c) is ungrammatical under an existential reading. In fact, when we attempt kind, generic, and existential readings with inanimate plural nouns, ungrammaticality obtains.

(36) a. *Matbaa(*-lar)* Osmanlı-ya çok geç gel-di (kind)
press.machine-PL Ottoman-DAT very late come-PST
'Printing machines came very late to the Ottomans.'

b. *Gürgen(*-ler)* su sev-me-z. (generic)
hornbeam-PL water like-NEG-AOR
'Hornbeams do not like water.'

c. El-im-e *diken(*-ler)* bat-tı. (existential)
hand-1SG.POSS-DAT thorn-PL prick-PST
'Thorns pricked my hand.'

Thus, I conclude that Sağ's argument that Turkish plural nouns pattern with their English counterparts in allowing kind, generic, and existential readings is misguided, as it is based exclusively on not-so-well-understood animate nouns.

Kind and generic readings are actually possible in Turkish even with inanimate plural nouns if a Subkind reading can be achieved. Thus, we have the following contrast.

(37) a. Bu ders-imiz-de *meyve-ler*-i isle-yeceğ-iz. (kind)
this class-1PL.POSS-LOC fruit-PL-ACC discuss-FUT-1PL
'We will learn about fruits in this class.'

a'. *Bilgisayar-lar* narin cihaz-lar-dır. (generic)
computer-PL fragile device-PL-COP
'Computers are fragile devices.'

b. **Matbaa-lar* ülke-ye geç gel-di. (kind)
pinting.machine-PL country-DAT late come-PST
'Printing machines came late to the country.'

b'. **Deri mont-lar* su-yla yıka-n-ma-z. (generic)
leather jacket-PL water-INST wash-PASS-NEG-AOR
'Leather jackets are not to be washed in water.'

Note that although *meyveler* 'fruits' and *bilgisayarlar* 'computers' in (37a-a') refer in the kind domain, they actually refer to subkinds of the relevant entities rather than the kind itself. This is possible given that *fruits* and *computers* can be successfully interpreted as "subkinds of the fruit/computer kind", which is somehow not available with *printing machines* and *leather jackets*. In Chapter 3, I demonstrate that the domain of Turkish bare nouns ambiguously contains object and subkind individuals; and that to the extent that plural kinds are possible, they refer to pluralities of subkinds.

Claim 3: Caseless singular nouns in object and predicate positions are kind referring.

Sağ further argues that non-case-marked and non-PL-marked bare nouns in object position, which are treated as pseudo-incorporated objects in Öztürk (2005), are instances of impure singular kind in the sense of Link (1983) and Landman (1989).

Such kind terms are known to have an opaque relation to their instantiations. Sağ gives the following examples to illustrate her point.

(38) Ali {**eski* / *teknik*} kitap oku-du.
Ali old technical book read-PST
'Ali read {*old / technical} books.'

The argument goes that *eski* 'old' is an object-level modifier, while *teknik* 'technical' is a kind level one. Since the bare noun *kitap* 'book' in non-case-marked object position is kind-denoting, it accepts kind level modifiers like *teknik* 'technical' but not object level ones like *eski* 'old', hence the contrast.

I believe this line of reasoning is not on the right track. Whether adjectival modification is acceptable with non-case marked bare objects is independent of kind/object contrast. (39) gives examples where adjectival modification is acceptable with object but not kind entities.

(39) a. ??Ali *dönüştürülebilir* bilgisayar al-dı. (kind)
Ali convertible computer buy-PST
'Ali bought convertible computers.'

b. Ali *kırık* kalem al-mış; geri ver-me-ye git-ti. (object)
Ali broken pen buy-PST back give-NOML-DAT go-PST
'Ali has bought broken pens; he went to give them back.'

Further, it is not very clear in such examples what is meant by kind denotation. Presumably it refers to the presence of an adjective which can successfully induce a "type-of" categorization, which I believe is too vague. Thus, one could argue that a *broken pen* is a type of pen, which complicates the issue even further.

Sağ goes on to argue that bare nouns in predicate position can also be given a similar analysis, i.e. that they are examples of impure singular kind, and that their

number-neutrality follows from their kind-denoting nature. Thus, she argues, modified bare nouns can only be predicates of singular but crucially not plural subjects, unless the modifier establishes a subkind relation.

(40) a. Ali *yakışıklı doktor*. (object)
Ali handsome doctor
'Ali is a handsome doctor.'

a'. Ali *pratisyen doktor*. (kind)
Ali practitioner doctor
'Ali is a practitioner doctor.'

b. *Ali ve Mehmet *yakışıklı doktor*. (object)
Ali and Mehmet handsome doctor
'Ali and Mehmet are handsome doctors.'

b'. Ali ve Mehmet *pratisyen doktor*. (kind)
Ali and Mehmet practitioner doctor
'Ali and Mehmet are practitioner doctors.'

The contrast between (40b) and (40b') is argued to follow from the bare noun *doktor* 'doctor' being a proper name of the DOCTOR kind. Since the modifier *yakışıklı* 'handsome' in (40b) be is object level, the resulting phrase cannot serve as a predicate to a plural subject. In (40b'), however, we have *pratisyen* 'practitioner' as the modifier, which modifies at the kind level, hence the grammaticality contrast.

I disagree, however. For one thing, modification of bare nouns in predicate position is generally bad in Turkish; and the construction is usually saved by inserting *bir* 'a/an' between the modifier and the noun. As such, even (40a) sounds ungrammatical to me. But how about the totally grammatical (40a') and (40b')? I believe the reason is that *pratisyen doktor* 'practitioner doctor' exists as a lexicalized expression, as evidenced by the fact that one cannot insert *bir* between the modifier and the bare noun (cf. ??*pratisyen bir doktor* 'a practitioner doctor'). In sentences

involving kind level yet non-lexicalized modifiers, ungrammaticality results, contra Sağ.

(41) a. *Ali *iğneci doktor*.
Ali injectionist doctor
'Ali is an injectionist doctor (i.e. always prescribes injection).'

b. ??Ali ve Mehmet *otoriter öğretmen*.
Ali and Mehmet authoritarian teacher
'Ali and Mehmet are authoritarian teachers.'

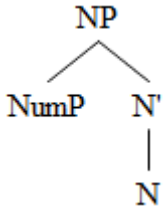
The fact that *otoriter öğretmen* 'authoritarian teacher' is better than *iğneci doktor* 'injectionist doctor', both of which modify at the kind level, can be attributed to the relative frequency of the former, suggesting that it may be lexicalized as such.

I conclude that Sağ's argument that bare nouns of Turkish denote atomic singular kind is not tenable. Chapter 3 demonstrates that they denote both kinds and objects.

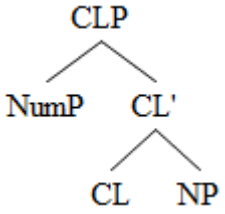
Claim 4: The general classifier 'tane' is an atomicity-presupposing partial identity function.

Finally, Sağ proposes that Turkish general classifier *tane* is a partial identity function which triggers a presupposition for atomic properties. She first rejects Chierchia's (1998a; 1998b) argument that nouns of classifier languages denote at the kind domain, and are thus inherently plural, and that classifiers are required to reach the atomic level of the kind. She argues that this cannot be the case, or else, classifiers would be required even with plural kinds, a prediction not borne out in Turkish. Instead, Sağ maintains, classifiers, like numerals, trigger the presupposition that their complement is atomic. Regarding the optionality of the classifier, she argues that the language has two ways for constructing numeral constructions:

(42) a. Numerals without a CL



b. Numerals with a CL



Note that an argument from identity function amounts to saying that classifiers are semantically vacuous, otherwise they would not be needed with already atomic bare nouns under Sağ's analysis. I demonstrate in Chapter 3, however, that this line of reasoning is utterly mistaken. Classifiers do have a function: They restrictively modify and subsequently single out the object reading of an otherwise two-way ambiguous bare noun. Second, the structure proposed does not allow for approximatives, which leads me to propose a head-final analysis which better fits the directionality parameter of Turkish. Last but not least, this proposal does not say anything regarding the properties of classifier constructions I laid down in Section 1.3.

To conclude, Sağ's analysis suffers from three major issues: (i) limited and highly marked, if not plain ungrammatical data, and (ii) overreliance on downward entailing contexts, and (iii) overreliance on animate NPs.

1.4.3 Görgülü (2012)

Another proposal on semantics of nouns and number marking in Turkish comes from Görgülü (2012). Building on Rijkhoff's (2002) framework of crosslinguistic noun classification in Table 1 (see also Section 2.2.1), Görgülü proposes that Turkish nouns denote sets, patterning with Oromo and Georgian as in Table 2.

Table 1. Görgülü's Noun Classification Based on Rijkhoff[10]

	[-Homogeneity]	[+Homogeneity]
[-Shape]	general nouns	
	sort nouns	mass nouns
[+Shape]	set nouns	
	singular object nouns	collective nouns

The feature [Shape] defines whether the noun denotes something with a definite outline, while the feature [Homogeneity] defines whether the noun refers cumulatively/agglomeratively.

Table 2. Properties of Nouns in Rijkhoff's Classification

Noun Type	Characteristics	Language
singular object nouns	direct co-occurrence with a numeral, obligatory plural marking with or without numerals	Dutch, English
set nouns	direct co-occurrence with a numeral, number marking is absent (if existent at all) in the presence of a numeral	Oromo, Georgian
sort nouns	no direct co-occurrence with numerals, obligatory combination of numerals with sortal classifiers, no plural marking	Thai, Chinese
general nouns	no direct co-occurrence with numerals, obligatory combination of numerals with general classifiers, no plural marking	Yucatec Maya

[10] Actually, Görgülü (2012) slightly modifies Rijkhoff's (2002) original classification (see Section 2.2.1) by introducing [±Homogeneity] as a possible lexical specification. He thus increases possible classes from four to six by adding 'mass nouns' and 'collective nouns' to the classification. Further, he associates Rijkhoff's [+Shape, -Homogeneity] set nouns to [+Shape] only, arguing that [+Shape, -Homogeneity] denotes collective nouns. Similarly, while [-Shape, -Homogeneity] denotes 'general nouns' in Rijkhoff's classification, Görgülü takes these features to denote 'mass nouns', associating general nouns with [-Shape] only and saving [-Shape, -Homogeneity] for 'mass nouns'.

The hallmark of set nouns is that they are lexically specified as [+Shape] but lack specification as to [Homogeneity]. Such nouns are characterized by number-neutrality in their bare form, as, Görgülü argues, is the case with Turkish. Out of the [+Shape, ±Homogeneity] (number-neutral) nouns, singular markers in Turkish derive [+Shape, -Homogeneity] (countable singulative) nouns, while plural markers derive [+Shape, +Homogeneity] (collective) nouns.

Although I agree with Görgülü that Turkish nouns denote sets, there are still weaknesses in his account, which I address briefly here. First, Görgülü controversially claims that Turkish is a non-CL language because it lacks classifiers as a grammatical category (Görgülü, 2012, p. 94). One wonders what category he would have assigned to the classifiers introduced in Section 1.3. The reason for arguing that Turkish lacks classifiers is obviously theory-internal. Since Görgülü claims that only sort nouns (found in Chinese and Thai) and general nouns (found in Yucatec Maya) require classifiers, he is forced to make that problematic assumption.

Second, he follows Rijkhoff (2002) in arguing that set nouns have nominal aspect markers (singulative vs collective) instead of number markers (singular vs plural). Nominal aspect is taken to be the nominal counterpart of verbal aspect, i.e. *Seinsart* instead of *Aktionsart* (Rijkhoff, 2002). Although he does not make it clear as to what he exactly means by "singulative" and how it contrasts with singular, he maintains that, in the absence of the singulative marker *bir* 'one', Turkish nouns strictly denote number-neutral sets. This position, however, is too strong. Number-neutrality is only restricted to certain contexts like the object position (43a) and existentials (43b). Nouns without *bir* 'one' must still receive strictly singular interpretations in canonical subject positions (43c).

(43) a. Can *kitap* oku-du.
Can book read-PST
'Can read books (one or many).'

b. Masa-da *kitap* var
table-LOC book exist
'There are books on the table (one or many).'

c. *Kitap* masa-da.
book table-LOC
'{The book is / *The books are} on the table.'

Turkish *-lAr*, on the other hand, is taken to mark collectivity, corresponding roughly to English word *family*. As such, a *-lAr*-marked noun in Turkish refers to "a collective set with multiple entities that together form a collective", and it "does not mark the number of entities" (Görgülü, 2012, p. 95). This, too, is quite problematic. Turkish does have collective nouns alongside regular object nouns; but the two behave quite differently. In contrast to non-collective nouns, collective ones are known to have a non-transparent relationship with their constituent members because they refer cumulatively. Therefore, the singular and plural forms of either groups of nominals give rise to different semantics (44a-b'). Further, while a plural object noun can function as an antecedent for a reflexive, a non-PL collective noun cannot (cf. (44c-c')); and non-PL collective nouns cannot trigger agreement (cf. (44d-d')).

(44) a. *bir* öğrenci
one student
'one student'

a'. öğrenci-*ler*
student-PL
'students' (plurality of 'student')

b. *bir* aile
one family
'one family'

b'. aile-*ler*
family-PL
'families' (plurality of {family / *family members})

c. Öğrenci-ler *kendilerine* güven-iyor.
student-PL themselves trust-IMPF
'The students trust themselves.'

c'. *Aile *kendilerine* güven-iyor.

d. Öğrenci-ler çalış-ıyor-*lar*.
student-PL work-IMPF-3PL
'The students are working.'

d'. *Aile çalış-ıyor-*lar*.

Finally, Görgülü's account says nothing about the function of classifiers in Turkish, since he denies them a category in the first place.

1.5 Layout of the dissertation

Chapter 2 reviews and critiques earlier studies in the literature on four issues immediately relevant for the purposes of this study: classifier typology, syntactic constituency of classifier constructions, classifier-measure word relation, and number marking. We will see that, typologically speaking, the mere presence of classifier is tied to three different factors: the contrasting semantics of nouns (Chierchia, 1998a; 1998b); the contrasting semantics of numerals (Krifka, 1995); and the structure nouns occur in (Borer, 2005). Regarding the syntactic constituency of classifiers, three main lines of proposals have been made: right-branching analyses (Cheng and Sybesma (1999; 2005), Tang (2005), and Zhang (2009)); left-branching analyses (Croft (1994) and Hsieh (2008)); and hybrid analyses (Zhang (2011a)). As for classifier-measure word relation, I will discuss the unified analysis offered in Tang (2005), Hsieh (2008), and Hsu (2015); and the split analysis offered in Cheng and Sybesma (1999), Borer (2005), and Zhang (2011a). Lastly, I review three main theories of Number marking: Link's (1983) lattice theoretic account, Sauerland's (2003) φP analysis, and Wiltschko's (2008) multi-layer analysis.

Chapter 3 addresses the semantics of Turkish bare nouns and several related issues. After a brief review of earlier accounts, I first discuss some properties of Turkish bare nouns and demonstrate that they are ambiguous as to whether they

denote in the object or kind domain. I then lay down the domains of count and mass nouns in Turkish. Finally, the function of classifiers and kind words is addressed. It shown in particular that classifiers and kind words serve to restrict the two-way ambiguous denotation of the noun to object and kind individuals respectively. It is demonstrated that the behavior of a group of nouns which resist classifiers and/or kind words follows from the analysis proposed.

Chapter 4 addresses the syntactic constituency of classifier constructions. First, it is demonstrated that some classifiers and measure words have a dual nature: lexical, and functional. Here, it is shown in particular that classifiers/measure words in their lexical disguise are regular words of type <e,t>, while functional ones are associated with the type <n, <e,t>>. I then turn to the syntactic constituency and semantic composition of classifier constructions, and propose the μP. It is demonstrated that this accounts for a number of properties of classifier constructions, including what is called the "individuating-measure ambiguity" of container classifiers. I then move on to multiple classifier constructions and demonstrate how the model presented in this chapter handles them with virtually no added assumptions. I finally discuss the puzzle of kind words and sketch a semi-formulated account of their syntax and semantics.

Chapter 5 addresses syntax and semantics of number marking in Turkish and how it interacts with classifiers. After laying down some background assumptions, I argue, with Sauerland (2003), that number marking is a property of DPs only, and demonstrate how this line of reasoning accounts for a wide range of properties of weak quantifiers and numerals on the one hand and strong quantifiers and determiners on the other. It is shown in particular that weak quantifiers and numerals lack a DP layer, and are thus always interpreted number-neutrally; whereas strong

quantifiers and determiners, which always project to a DP, never have number-neutral interpretation and must always surface with morphosyntactic singular/plural features. Next, I propose and elaborate on the Number Neutrality Condition (NNC) according to which μP must compose with semantically number-neutral nouns. This is shown to be preferable to other analyses on theoretical as well as empirical grounds.

Chapter 6 discusses the singular reference of plural pronouns in what is known as Plural Pronoun Constructions (PPCs), which is typically the case with Comitative Coordination (CC), and proposes an analysis in line with Sauerland's (2003) account of Number. After laying down some distributional properties of PPCs and highlighting the weaknesses of earlier accounts, an agreement-based model of PPCs is proposed according to which the plural feature on the plural pronoun is not a feature of the pronoun itself but one of the coordinated DP. The plural pronoun acquires this feature as a result of the movement of the person feature from the higher pronominal conjunct to the coordinated DP. Due to the ensuing chain between the pronominal conjunct and the coordinated DP, the higher plural pronoun receives a Spell-out in PF while the lower copy is deleted. Coupled with independently established constraints, this model is further demonstrated to predict a number of puzzling properties of PPCs that earlier models would struggle with.

Chapter 7 concludes the dissertation by reviewing the claims and findings of this study and pointing to areas of further research.

1.6 Some notes on terminology

In this section, I would like to clarify two issues concerning the aim of this dissertation: (i) the term "classifier", and the term "classifier language".

First comes the issue of what the word "classifier" should be taken to mean. Almost all languages have some way to linguistically categorize its nominals (Aikhenvald, 2006). The word "classifier" tends to be used as an umbrella term for linguistic devices that perform this "classification" function. Such devices range from lexical items like numeral classifiers to highly grammaticalized gender systems. Aikhenvald (2006) distinguishes six types of classification: (i) noun classes, (ii) noun classifiers, (iii) numeral classifiers, (iv) classifiers in possessive constructions, (v) verbal classifiers, (vi) locative classifiers, and (vii) deictic classifiers, with the last two having lesser crosslinguistic ubiquity. A similar position is taken in Grinevald (2000) who proposes that classificatory devices occupy varying positions on a lexical-functional continuum as in Table 3.

Table 3. Grinevald's Classification Continuum

lexical		functional
←	→	
measure terms class terms	classifier systems (numeral classifiers) …	noun classes gender

Details of their analyses aside, the type of classifier I am interested in this dissertation is what Grinevald (2000) and Aikhenvald (2003; 2006) call "numeral classifiers". The term "classifier" is meant to refer to them exclusively, unless stated otherwise. The hallmark of these items is that they almost exclusively occur with a numeral.

Next comes the issue of a "classifier language". The literature typically makes a three-way distinction with respect to how languages use classifiers: (i) obligatory classifier languages like Chinese and Korean in which all numerals must occur with a classifier, (ii) optional classifier languages like Turkish and Persian in

which a classifier can but does not have to accompany a numeral, and (iii) non-classifier languages like English and German which are argued to lack such items. In a representative study involving 400 languages, Gil (2013) notes that classifiers are absent in 260, obligatory in 78, and optional in 67. Thus, the quantitative difference between obligatory and optional classifier languages is not very high. Therefore, I believe that the optionality of a classifier in the second group of languages, despite being descriptively correct, is not of much significance, at least not for the purposes of this study. Consider why.

First, this study is primarily concerned what the semantic function of classifiers, if they have any at all, when they occur in a construction obligatorily or optionally. This, I believe, is much more interesting than why a classifier is obligatory, optional, or absent.

Second, classifier-like elements that serve exactly the same semantic purpose can also be found in English-type languages (cf. *two head cattle*) that have so far been categorized as a non-classifier language (Lehrer, 1986). Although both Lehrer (1986) and Tang (2005) categorize English classifiers as nouns; I believe such labelling does not have much explanatory power. Even when taken to be nouns categorially, one will have to assign a different semantics to the word *head* in its classifier use (cf. *two heads of lettuce*) than its regular use. It is this semantics that we are particularly interested in here.

Third, the issue of optionality can be dealt with in a number of ways, depending on the theory assumed. One could argue that the so-called optional classifier languages actually have a phonologically null classifier, which amounts to saying that it is not really optional. On the other hand, it may be that the lack of phonological overtness truly signals the lack of a classifier. Csirmaz and Dékány

(2014) provide similar arguments for Hungarian, which has also been labelled as a non-classifier language, presumably due to the optionality of classifiers and the availability of a plural marker. They demonstrate that Hungarian classifiers pattern with their Chinese counterparts in a number of ways, which they take to indicate that Hungarian is indeed a classifier language after all. In brief, with regard to whether and why classifiers are optional, the path worth taking is to address in what ways they affect the interpretation of the construction rather than being bogged down with terminological distinctions like 'optional' or 'obligatory' that has virtually no explanatory power. This is precisely what I intend to do in this study. It would be interesting to see if all classifiers (optional or obligatory) serve the same semantic function; and more importantly, if their presence and/or absence gives rise to (near) identical results in these three groups of languages.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, I review earlier work on four main issues surrounding classifier constructions: (i) classifier typology, (ii) syntactic constituency of classifier constructions, (iii) classifier-measure word relation, and (iv) number marking. I review these proposals from the perspective of Turkish data, and highlight their strengths and weaknesses.

2.2 Classifier typology

The section discusses theories on the problem of classifier typology, i.e. why the numerals of obligatory classifier languages always require the presence of an overt classifier to mediate their relation with the noun.

2.2.1 Chierchia's (1998a) noun-based analysis

Chierchia (1998a) develops a theory of noun semantics that has implications for the typology problem. According to Chierchia, the classifier/non-classifier split is due to a difference in the denotation of the nouns in the two groups of languages. More specifically, Chierchia argues that in English-type non-CL languages, there are two sets of nouns: count nouns that can directly combine with numerals, and mass nouns that cannot. Mass nouns, which Chierchia takes to be kind-denoting and thus inherently plural, require the mediation of a classifier, which is viewed as a function from kinds to sets of atoms. Unlike English, however, Chinese-type classifier languages only have kind-denoting, inherently plural mass nouns; and classifiers are

obligatory to reach the atomic level of the kind. Thus, contra the argument for the universality of DP (Abney, 1987; Stowell, 1991; Szabolci, 1994; Longobardi, 1994), Chierchia proposes his Nominal Mapping Parameter (NMP), based on the binary values of two features: [argument], and [predicate]. According to Chierchia, languages lexically encode their nouns with a combination of these features as in Table 4, which determines the way they behave and the interpretation they receive.

Table 4. Chierchia's Nominal Mapping Parameter

Language	Predicate	Argument	Type
Italian	+	-	<e,t>
Chinese	-	+	e
English	+	+	mass: e, count: <e,t>

Chierchia argues that the contrasting properties of these three groups of languages given in Table 5 follow from the properties of their nouns.

Thus, in Chierchia's model, all nouns of classifier languages are treated on a par with English mass nouns like *furniture*, the denotation of which is given below as a join semilattice in the sense of Link (1983).

(1) Denotation of *furniture*

⟦furniture⟧ = {x, y, z, x⊕y, x⊕z, y⊕z, x⊕y⊕z}

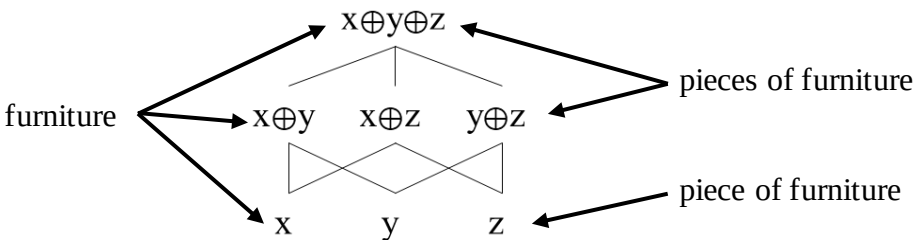


Table 5. Properties of Nouns Under Nominal Mapping Parameter

Noun Specs	Language	Properties
[+pred, -arg]	Italian	i. All nouns are predicates of type <e,t>, and cannot occur as arguments. ii. All argument nouns must be embedded under DP, which turns them into type *e*. iii. There is count/mass distinction, iv. There is plural morphology for count nouns.
[-pred, +arg]	Chinese	i. All nouns are kind-referring (type *e*), and can occur as arguments. ii. No noun is embedded under a DP; there is no DP. iii. There is no count/mass distinction since all nouns are kind-referring. iv. There is no plural morphology, since kinds are inherently plural. v. There is a generalized classifier system that reaches the atomic level of the kind.
[+pred, +arg]	English	i. Count nouns are predicates of type <e,t>, mass nouns are arguments of type *e*. ii. Count nouns must be embedded under DP, which turns them into type *e*. iii. There is count/mass distinction, [+predicate]=Count, [+argument]=Mass. iv. Mass nouns can occur as bare arguments, count nouns cannot. v. There is plural morphology for count nouns, but not for mass nouns. vi. Classifiers are required for mass nouns to reach their atomic level.

The crucial aspect of the analysis in (1) is that the extension of the mass noun *furniture* includes all the atomic parts (x, y, and z) as well as all the pluralities that can be construed from these atomic parts (x⊕y, x⊕z, y⊕z, x⊕y⊕z). In order to access the atomic parts and x, y, and z, the classifier(-like) *piece* is used; and to access the sums x⊕y, x⊕z, y⊕z, and x⊕y⊕z, its plural form *pieces* must be used.

Chierchia argues that this is exactly what happens in classifier languages. Since their nouns are kind denoting and thus inherently plural, corresponding to the English word *furniture*, a classifier becomes obligatory to access atomic instances of the kind. Thus, the difference between classifier and non-classifier languages boils down to a contrast between the semantics of their nouns.

There are problems, however. First, note that, by assuming that mass nouns have semantics parallel to that of *furniture*, Chierchia also departs from the general, and to my mind well established, fact that mass nouns have no minimal parts. In general, *furniture* type words are not prototypical examples of mass nouns, as evidenced by the observation that such words are countable in many languages. Mass nouns are best exemplified by *water* type words, which are uncountable cross-linguistically, and have no minimally distinct subparts. Zhang (2011a) observes that the traditional two-way count/mass classification does not have adequate descriptive power, and instead proposes the four-way classification in Table 6 based on the binary values of two features: [numerable], and [delimitable].

Table 6. Zhang's Classification of Count/Mass Nouns

[numerable]	[delimitable]	example	countability status
+	+	*apple*	count with a delimitable feature
+	-	*belief*	count without a delimitable feature
-	+	*furniture*	non-count, non-mass
-	-	*oil*	mass

Until Zhang's (2011a) classification, the status of *belief* and *furniture* type words had been a puzzle. While *belief* type words have plural forms, despite lacking minimal parts, *furniture* type words lack a plural form despite having minimal parts.

Thus, the latter can be modified by size- and shape-denoting adjectives while the former cannot.

(2) a. *{small / big / round} *belief* (+numerable, -delimitable)

b. {small / big / round} *furniture* (-numerable, +delimitable)

Therefore, by subsuming all non-count nouns into one class, Chierchia misses an important generalization.

Second, Chinese been demonstrated to have count nouns, contra Chierchia (Cheng & Sybesma, 1999; Tang, 2004; Tang, 2005). The same pattern is also reported for Korean in Yi (2010; 2011). Speaking for Turkish, the words *sayısız* 'numerous', *birkaç* 'a few', and *üç beş* 'several' can only modify count nouns, strongly challenging the proposal that classifier languages lack count nouns.

(3) {sayısız / birkaç / üçbeş} {ev / insan / mobilya / *benzin / *su}
numerous a.few several house human furniture gasoline water
'{numerous/a few/several} {houses / people / furniture / *gasoline / *water}'

Third, Harley (2005) demonstrates that denominal verbs of English built on uncountable nouns derive atelic predicates, while those built on countable verbs derive telic ones. This also applies in Turkish, suggesting that Turkish has count/mass distinction like English.[11] A detailed analysis of the aspectual properties of Turkish denominal verbs built on count/mass nouns is presented in Aksan (2004).

(4) a. The mare *foal*ed in/*for two hours.

b. The baby *drool*ed *in/for two hours.

[11] I would like to thank my advisor Balkız Öztürk for bringing this set of data to my attention.

c. Kısrak iki saat {içinde/*boyunca} *yavru*-la-dı. (Turkish)
mare two hours in for foal-DRV-PST
'The mare foaled {in/*for} two hours.'

d. Bebek iki saat {*içinde/boyunca} *ter*-le-di
baby two hours in for sweat-DRV-PST
'The baby sweated {*in/for} two hours.'

Fourth, the general classifier *tane* in Turkish cannot be used with mass nouns (Zhang's *belief* and *oil* type words), and when it does, it yields a measure reading. Thus, (5a) is only grammatical under the contextually-supplied measure reading (possibly a glass of tea), while (5b) is not, presumably because no contextually supplied measure exists for gasoline to facilitate the interpretation.

(5) a. iki tane çay
two CL tea
'two teas'

b. *iki tane benzin
two CL gasoline
'two gasolines'

Fifth, there is are languages like Dëne Sułiné which lack both a generalized classifier system and plural markers (Wilhelm, 2008). Zhang (2014) further demonstrates that Mandarin Chinese does have a productive mechanism of expressing plurality by reduplicating classifiers and measure words. Neither pattern is predicted under Chierchia's typology.

Sixth, Chierchia's analysis says nothing regarding the optionality of classifiers. By his reasoning, one would conclude from the lack of classifiers that Turkish is a [+predicate] language since numerals can directly count NPs; whereas the exact opposite would be the case in the presence of a classifier. This is tantamount to saying that nouns of optional classifier languages have two guises. I demonstrate in detail in Chapter 3 that this cannot be the case.

Finally, even strictly classifier languages like Korean have a set of nouns that productively appear without a classifier (Ahn, 2018), not to mention that Korean allows classifiers and plural markers to co-occur (An, 2016).

Rijkhoff (2002) similarly proposes the classification in Table 7, based on the ± values of [Shape] and [Homogeneity], which respectively denote whether a noun denotes something with a definite outline, or whether it refers cumulatively.

Table 7. Rijkhoff's Classification of Nouns

	[-Homogeneity]	[+Homogeneity]
[-Shape]	sort nouns	general nouns
[+Shape]	singular object nouns	set nouns

Rijkhoff (2002) argues that languages that lexically specify their nouns with a combination of these features will have the properties in Table 8.

Table 8. Properties of Nouns Under Rijkhoff's Classification

Noun type	Characteristics	Language
singular object nouns	i. direct co-occurrence with a numeral, ii. obligatory plural marking with or without numerals	Dutch, English
set nouns	i. direct co-occurrence with a numeral, ii. number marking is absent (if existent at all) in the presence of a numeral	Oromo, Georgian
sort nouns	i. no direct co-occurrence with numerals, ii. obligatory combination of numerals with sortal classifiers, iii. no plural marking	Thai, Chinese
general nouns	i. no direct co-occurrence with numerals, ii. obligatory combination of numerals with general classifiers, iii. no plural marking	Yucatec Maya

In this view, [-Shape] sort nouns and general nouns require the presence of a classifier. This is because, since these types of nominals do not denote entities with a definite outline, and since only discrete entities can be counted, a classifier is necessary to 'unitize' them so that they can be counted. CL-languages, however, come in two forms: those with set nouns, and those with general nouns. The different between these two types of languages is that while the former will have sortal classifiers that target specific nouns which form a semantic class (cf. Chinese), the latter will only have general classifiers that can co-occur with any type of nominal (cf. Yucatec Maya).

Since I have already pointed to the weaknesses of noun-based analyses, I will not say more here (but see Section 1.4.3 where I discuss Görgülü's (2012) analysis). Suffice it to say that Rijkhoff's (2002) analysis, though proposed as a crosslinguistic account of nominal classification, is silent on the status of optional classifier languages, which constitute a sizeable number of world languages (Gil, 2013).

2.2.2 Krifka's (1995) numeral-based analysis

Another theory on the problem of typology comes from Krifka (1995), who argues that the classifier/non-classifier contrast results from a difference in the numerals of these languages. More specifically, Krifka maintains that numerals in non-classifier languages carry a measure function (μ) lexically incorporated into their denotation, whereas the numerals of classifier-languages lack μ. Classifier are precisely required for that. In a sense, English *two* corresponds to Chinese *liang ge* 'two CL' as in (6).

(6) a. $[\![\text{two}]\!] = \lambda P : \text{ATOMIC}(P).\{x :^{*}P(x) \ \& \ \mu_{\#}(x) = 2\}$

b. $[\![\textit{liang}\ \text{'two'}]\!] = \lambda m \lambda P : \text{ATOMIC}(P).\{x :^{*}P(x) \ \& \ m(x) = 2\}$

c. $[\![\textit{ge}\ \text{'CL'}]\!] = \mu_{\#}$

More generally, Krifka takes all nouns in all languages to be kind-denoting.[12] In English, a numeral can count both kinds and objects constituting a member of that kind, while Chinese numerals carry no information as to whether they count kinds or objects. Classifiers help to disambiguate the available readings a noun has potentially.

Krifka's proposal is appealing in a number of respects. First, note that in English a [Numeral-NP] construction is inherently ambiguous as to whether it denotes a kind or an object.

(7) two bears

i. 'two *kinds* of bears'
ii. 'two *individual* bears'

In Turkish, too, the lack of a classifier makes the denotation of the noun ambiguous. But crucially, the presence of *tane* automatically singles out the object reading.

(8) Burda *iki* *ayı* var.
here two bear exist
'There are two bears here.'

i. bozayı ve kutup ayısı (the grizzly and the polar bear) (kind)
ii. biri garajda, biri bahçede (one in the garage, one in the garden) (object)

(9) Burda *iki* *tane ayı* var.
here two CL bear exist.

i. '*There are two kinds of bear here.' (kind)
ii. 'There are two individual bears here.' (object)

[12] In a later work, though, Krifka (2004) proposes that all nouns denote properties. See Section 3.2.3.

Nevertheless, given that all nouns start out as denoting in the kind domain, Krifka's analysis would wrongly predict all nouns to have kind reference in the absence of a classifier, which is not the case (see (8)). Further, the grammaticality of examples like (10) calls Krifka's analysis into question. If the noun *ayı* 'bear' is already kind-denoting, what is the function of the word *tür* 'kind' in the construction? Note that we cannot simply argue that kind terms like *tür* 'kind' are semantically vacuous identity functions since their absence makes the sentence truly ambiguous while their presence obligatorily denotes the kind.

(10) Burda *iki tür ayı* var.
here two kind bear exist
'There are two kinds of bear here.'

Second, Krifka's analysis can also potentially explain part of the selection problem noted in Section 1.3.5. Recall that in Persian, the numeral *yek* 'one' rejects the general *ta*. If languages can freely incorporate μ into their numerals, it is perhaps what happened to the Persian *yek*. On the other hand, if this is the case, one would predict such numerals to be incompatible with kind-denoting constructions, which I doubt is the case in any language.

Additional evidence in support of Krifka comes from a Mayan language called Chol. Bale and Coon (2014) state that in Chol, which is an obligatory classifier-language, numerals up to and including *five* reject classifiers while those greater than *five* require them. Note in the passing that classifiers can co-occur with plural markers in Chol, contra Chierchia (1998a).

(11) a. na'n (**te's*)-ijig ji'nm-ug
five CL-AGR man-PL
'five men'

b. asugom *(*te's*)-ijig ji'nm-ug
six CL-AGR man-PL
'six men'

So far, this is reminiscent of Persian *yek* 'one'. But Chol has also borrowed extensively from Spanish, including numerals. Interestingly though, while native numerals greater than *five* require classifiers, Spanish-borrowed ones reject them.

(12) nuebe(*-*p'ej*) tyumuty (*nuebe* is Spanish-borrowed 'nine')
nine CL egg
'nine eggs'

Under the assumption that native speakers of Chol borrow Spanish numerals as is, i.e. with μ incorporated, this intriguing property follows naturally from Krifka's account.

Further, it has been observed that in classifier languages, classifier-less numerals cannot act as predicates (see Sudo (2016) for Japanese) while their counterparts in non-classifier languages can, confirming Krifka's contrasting numerals account. This applies in Turkish, too.

(13) a. The causes of the economic crisis are *three*.

b. Ekonomik kriz-in nedeni *üç* *(*tane*). (Turkish)
economic crisis-GEN cause three CL
'The causes of the economic crisis are three.'

I personally find this argument essentially weak. First, the insertion of *sayıca* 'in number' before the numeral is sufficient to lift the ungrammaticality, without recourse to a classifier.

(14) Ekonomik kriz-in nedeni *sayıca* üç.
economic crisis-GEN reason in.number three
'The causes of the economic crisis are three in number.'

Second, it is not clear if English numerals can productively be used as predicates. I personally feel that *in number* should also be inserted at the end of (13a). The validity of this argument needs further checking.

Krifka's analysis comes very close in accounting for the classifier/non-classifier contrast, in particular his proposal that the mismatch lies not in nouns but in numerals. However, he mistakenly assumes that all nouns of all languages are kind denoting only. I propose in Chapter 3 that nouns of classifier as well as non-classifiers languages are ambiguous as to what domain they pick up; and that classifiers and kind words serve to restrict the domain to object and kind entities respectively. Their absence in optional classifier and non-classifier languages results in ambiguity, unless other factors strongly favor either interpretation.

One further shortcoming of Krifka's analysis is that he is silent on other properties of classifier constructions that I laid down in Section 1.3. For other counterarguments to numeral-based analyses, see Zhang (2011a, pp. 141-143).

2.2.3 Borer's (2005) structure-based analysis

Borer (2005) offers a theory according to which no language encodes its nouns with lexical count/mass distinction. She argues that all nominals in all languages are underspecified with respect to count/mass distinction, and that the contrast arises as a function of the syntactic context. Borer cites examples like (15) in which apparent mass nouns have count semantics, and vice versa.

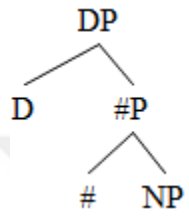
(15) a. We would like *three coffees*, please. (*coffee* as a count noun)

b. There is *a lot of house* for the money. (*house* as a mass noun)

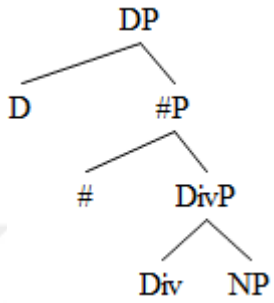
Borer provides a syntactic mechanism as to how this happens. According to her, the noun may or may not project to a Div(ision)P. The presence of DivP signals the count reading, and the absence thereof the mass reading.

(16) Structure of DP

a. Mass



b. Count



The function of DivP is to divide the denotation of the noun into countable units. In Borer's model, plurality is not number/quantity specification, nor is it a function from singulars. Countability can be performed in by plural morphology as in English or by classifier as in Chinese, hence their complementarity. Part of Borer's evidence comes from Armenian, a language which has both classifiers and plural morphology but tellingly, the two cannot co-occur.

(17) a. Yergu hovanoc uni-m.
two umbrella have-1SG
'I have two umbrellas.'

a'. Yergu *had* hovanoc uni-m.
two CL umbrella have-1SG
'I have two umbrellas.'

b. Yergu hovanoc-ner uni-m.
two umbrella-PL have-1SG
'I have two umbrellas.'

b'. *Yergu *had* hovanoc-ner uni-m.
two CL umbrella-PL have-1SG
Int.: 'I have two umbrellas.'

Here are some problems with Borer's account. First, we have already seen in Section 2.2.1 that Turkish does have lexical count/mass contrast. Second, Borer's examples have alternative explanations. Cases where a count noun receives a mass interpretation are argued to follow from Pelletier's (1975) Universal Grinder, a mechanism that takes a count noun and returns a mass one. The universality of this principle has already been called into question, however. Doetjes (1997), for example, argues that Universal Grinder can only apply to a certain group of nouns, meaning such coercions have a restricted pattern. Whether or not Universal Grinder is truly universal, the mere postulation of such a principle presupposes the existence of count nouns in the first place, contra Borer.

As for cases of mass nouns receiving count readings, Jackendoff (1991) proposes the principle of Universal Packager, which takes a mass noun and turns it into a count one. The count reading thus derived typically refers to a context-dependent *portion* or *serving* of the substance, as is the case in Borer's *coffee* example. It has also been noted in the literature that Universal Grinder has greater crosslinguistic validity than Universal Packager, further weakening Borer's account.

Third, although Borer's model seems to have the edge in explaining the apparent complementarity of plural markers and classifiers in the case of Armenian, we have already seen that this constraint is not bulletproof. Recall from Chapter 1 (example (11)) that in Persian, a [Numeral-NP] construction can actually contain a plural marker; yet, quite unlike what Borer argues, this is only possible if a classifier is also present. The compatibility of classifiers with plural markers is also attested in Kadiwéu, a Waikurúan language spoken in South America, (Sandalo & Michelioudakis, 2016), Korean (Kim & Melchin, 2018), and Indonesian (Dalrymple & Mofu, 2012), further undermining Borer's account.

Fourth, there are languages with no overt plural markers or classifiers at all, making one wonder how division is done. Finally, the assumption that countability is a function of syntactic context only is problematic.

(18) *I would like to have three gasolines, please.

The ungrammaticality of (18) makes it clear, in support of Doetjes (1997), that syntactic context alone cannot guarantee count/mass shifts.

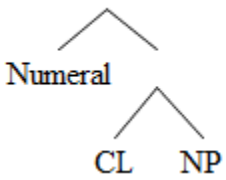
2.3 Syntactic constituency

This section reviews earlier proposals on the syntactic constituency of classifier constructions, i.e. whether the classifier first combines with the noun or the numeral.

2.3.1 Right-branching analyses

Right-branching analyses, of the form in (19), are basically motivated by the observation that classifiers can impose selectional restrictions on the nouns they compose with.

(19) Right-branching analysis



Assuming that selection requires a local configuration, it is thought that the classifier must c-command the NP. Variations in labelling aside, Cheng and Sybesma (1999; 2005), Tang (2005), and Zhang (2009) argue for a right-branching analysis of classifier constructions. Here, the NP first combines with the CL, providing a

configuration for selection. The resulting object then merges with the numeral and the classifier constructions is derived.

Note in the passing that while Tang (2005) base-generates both classifiers and measure words in the same slot, Cheng and Sybesma (1999; 2005) and Zhang (2009) propose different projections for them. What they have in common though is that classifiers and measure words stand in a position where they c-command the NP.

Besides selection, the right-branching analysis also provides a natural mechanism for why classifiers and measure words cannot co-occur: They compete for the same syntactic slot either at merge (Tang (2005) or derivationally (Cheng and Sybesma (1999; 2005) and Zhang (2009). Right-branching analyses also have the edge in explaining what are called N-CL compounds. Both Chinese and Turkish classifiers can form a compound with the noun in the absence of a numeral, suggesting that the two are merged before the introduction of the numeral.

(20) a. hua-*duo* / shu-*ben*
flower-CL book-CL
'flower / book'

b. sayfa *aded*-i / kum *tane*-si
page CL-POSS sand CL-POSS
'page / sand'

General classifiers are often banned in such compounds; but interestingly, the compound head classifier alone cannot license the construction. Thus, a post-numeral classifier is still obligatory in Chinese, which sometimes results in classifier-doubling. In Turkish, however, these constructions are marked.

(21) a. san *(*ge*) hua-*duo* / san *(*duo*) hua-*duo* (Chinese)
three CL flower-CL three CL flower-CL
Both: 'three flowers'

b. ??üç *tane* sayfa *aded*-i (Turkish)
three CL page-CL-POSS
'three paper sheets'

Such examples lead Zhang (2011a) to conclude that the presence of the first classifier in Chinese classifier doubling constructions is a purely syntactic requirement. The classifier here is argued to be a place-holder. I argue in Chapter 4 that the compound head classifier in classifier doubling constructions is not a functional item but a lexical one of type <e,t>, and that the first classifier does serve a purpose rather than being a pure place holder.

Right-branching analyses also fail to account for some other properties associated with classifier constructions. First, under extraposition, the classifier sticks with the numeral rather than the noun, as has first been observed in Greenberg (1974). This has been attested in all the languages studied so far.

(22) a. Taroo-wa *san-satu* no hon-o katta (Japanese)
Taroo-TOP three-CL NO book-ACC bought

a'. *San-satu*, Taroo-wa hon-o katta
three-CL Taroo-TOP book-ACC bought

a''. Taroo-wa hon *san-satsu*-o katta.
Taroo-TOP book three-CL-ACC bought

All: 'Taroo bought three books.'

b. Can *üç* *tane* kitap aldı. (Turkish)
Can three CL book bought

b'. Can kitap aldı *üç* *tane*
Can book bought three CL

Both: 'Can bought two books.'

cf. *Can *tane* kitap aldı *üç*.

In fact, classifiers tend to cliticize on numerals rather than nouns, suggesting their intimate relation.

Second, I argue in Chapter 4 that the right-branching analysis fails to account for approximative constructions in which the [numeral-CL] sequence is separated from the noun by an approximator word.

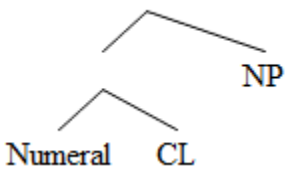
(23) [on tane] *kadar* öğrenci
ten CL about student
'about ten students'

Third, except N-CL compounds, classifiers are generally bad with nouns that lack a numeral, which is unpredicted under the right-branching analyses. Such concerns have motivated the left-branching analyses, which I address now.

2.3.2 Left-branching analyses

This line of reasoning is motivated by Greenberg's (1974) statement that in classifier languages, the numeral first combines with the classifier, and the resulting unit combines with the NP (p. 227), as schematically represented in (24). This is the position taken in Croft (1994), and Hsieh (2008).

(24) Left-branching analysis



This structure has certain advantages over the right-branching one. One immediate advantage is that, since the numeral and the classifier form a unit to the exclusion of the noun, the problem of extraposition disappears.

Second, recall from Section 1.3.5 that Persian *one* rejects classifiers; and from Section 2.2.2 that Spanish-borrowed numerals in Chol contrast with native numerals in rejecting classifiers. Thus, the left-branching analysis also has a natural account of this data: The denotation of the classifier is simply incorporated into the numeral, thanks to the already available [Spec, Head] configuration. This is essentially what Krifka (1995) concludes: Numerals of non-classifier languages have incorporated μ, while those of classifier languages have not.

Third, if, by Uniformity Principle, we were to consider all languages to be essentially uniform and confine variation to idiosyncratic lexical properties, we would have basically two options for non-classifier languages: (i) it is either the case that their nouns have incorporated the function of classifiers, or (ii) that their numerals have incorporated the function of classifiers. Now, the first option does not seem to be plausible, given that non-classifier languages have been demonstrated to have count nouns. Thus, we only have the second choice, which lends further support to left-branching analyses.

Finally, the left-branching analysis squares better with approximatives (cf. (23)). For a detailed analysis, see Chapter 4.

2.3.3 Hybrid analyses

A third group of linguists argue for different structures for different classifier constructions. In general, a right-branching structure is assigned to classifier constructions, and a left-branching one to measure constructions. The most detailed analysis in this group comes from Zhang (2011a), who slightly deviates from his earlier work (2009).

Zhang (2011a) divides unit words into seven categories as in Table 9: (i) container measures, (ii) standard measures, (iii) partitive classifiers, (iv) collective classifiers, (v) individual classifiers, (vi) individuating classifiers, and (vii) kind classifiers. She then goes on to put these categories into two groups based on their distributional behavior.

Table 9. Unit Word Categories

Group	Category	Example
Group 1	container measure	*bardak* glass
	standard measure	*litre* liter
	partitive classifier	*dilim* slice
	collective classifier	*demet* bunch
Group 2	individual classifier	*tane* CL
	individuating classifier	*damla* drop
	kind classifier	*tür* kind

Of these seven types, Zhang (2011a) argues that the first four constituting Group 1 have a left-branching structure while the last three constituting Group 2 have a right-branching structure.

Zhang (2011a) motivates her analysis on several pieces of data. First, two contrasting modifiers can co-occur in Chinese classifier constructions of Group 1, but not of Group 2.

(25) a. *dada* de san wan *xiao* yingtao (container M, Group 1)
big DE three bowl small cherry
'three big bowls of small cherries'

b. *[*dada* de] san li *xiao* yingtao (individual CL, Group 2)
big DE three CL small cherry
'three big CL small cherries'

Second, Group 1 classifiers create an opaque domain for adjectival modification (26a) while Group 2 CLs do not (26b-b').

(26) a. yi {*xiao* / *da* / **hong* / **mei*} xiang shu
one small big red pretty box book
'one {small/big/*red/*pretty} box of books'

b. yi ke *da* pingguo
one CL big apple

b' yi *da* ke pingguo
one big CL apple
'one big apple'

Third, Group 2 classifiers impose selectional restrictions on their complement NPs while Group 1 classifiers do not. Thus, Zhang (2011a) argues that both right- and left-branching structures are available in languages, and are used in specific constructions.

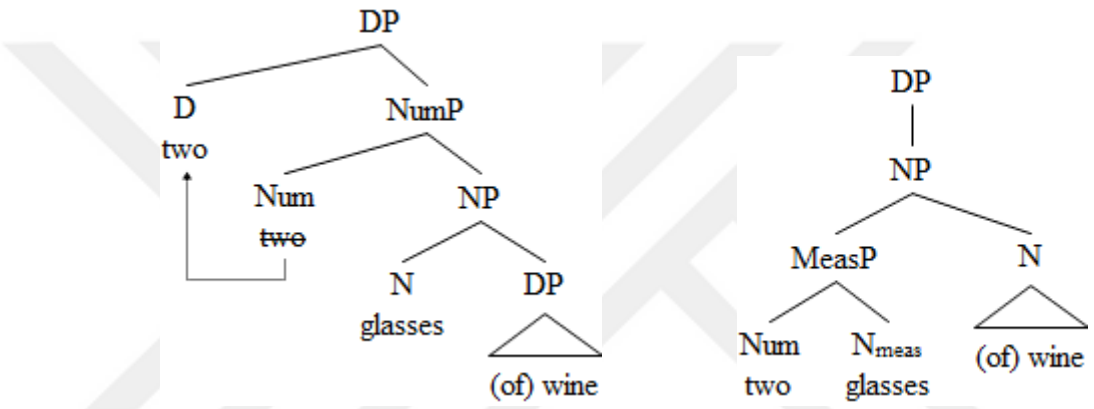
Another insightful analysis is provided by Rothstein (2011), who particularly focuses on the two potentially available readings of classifier constructions involving a container word: counting reading, and measuring reading. A prototypical example of count/mass ambiguity is (27).

(27) two glasses of wine

On the counting reading of (27), we are actually talking about two glasses full of wine, while on the measuring reading, we are simply talking about wine that

coincidentally equals the amount that would fill two glasses. Thus, the counting reading requires the wine to be in two glasses, while the measuring reading does not. Assuming that the overall meaning of a constituent is determined by its head, Rothstein (2011) proposes that the phrase must be headed by *glasses* in the counting reading, and by *wine* in the measuring reading. She proposes (28) for the two readings.

(28) a. Counting reading b. Measuring reading



Rothstein (2011) adduces several pieces of evidence for her analysis, two of which I will mention here. First, the classifier can be suffixed with *-ful* in its measure reading only.

(29) a. *Bring two glass*ful*s of wine for our guests. (Counting)

b. Add two glass*ful*s of wine into the soup. (Measuring)

Second, parallel to Zhang's (2011a) adjectival modification cases, an adjective positioned before *glasses* c-commands and thus successfully modifies the NP in the count reading (30a). But this is not possible in the measure reading due to lack of c-command (30b).

(30) a. The waiter brought three *expensive* glasses of cognac.

b. *She added three *expensive* glasses/glassfulls of cognac to the sauce.

Thus, Rothstein (2011) argues that even prototypical measure constructions can have different underlying structures, with concomitant interpretive differences.

Li and Rothstein (2012) extend the split analysis to the case of large numbers discussed in Section 1.3.7. Recall that in the obligatory classifier language of Chinese, high round numbers facilitate dropping of the otherwise obligatory classifier, as in (31).

(31) *Liu-yi* (ge) funü cheng ban-bian tian.
six-billion CL woman support half-part heaven
'Six billion women take half of the responsibilities of the world.'

Li and Rothstein (2012) argue that this is because classifier constructions built on such approximate numbers are in fact not counting but measuring expressions associated with the syntax in (28b). They motivate their analysis on the observation that the Chinese modifier *DE* can occur with measuring but not counting expressions.

(32) a. san bang (*de*) rou (measuring)
three pound DE meat
'three pounds of meat'

b. ba tou (**de*) niu (counting)
eight CL DE cow
'eight cows'

Based also on the behavior of *DE* with additives like *duo* 'more', and approximators like *zuoyuo* 'approximately', Li and Rothstein (2012) conclude that *DE* in classifier constructions is always a marker of measuring. Thus, in classifier constructions built

on container words, which are globally ambiguous between a counting and a measuring reading, the presence of *DE* always gives rise to a measure interpretation.

The optionality of the classifier and the optional presence of *DE* in constructions involving a counting classifier and a high round number lead Li and Rothstein (2012) to propose that such constructions are measuring expressions. Their argument is based on the assumption that approximation is a measure function, quite distinct from counting: While counting "puts the atomic parts of a plural entity in one-to-one correspondence with the natural numbers", approximation "assign[s] an (approximate) cardinality to a quantity without identifying the atoms" (Li & Rothstein, 2012, p. 723). In a sense, approximation is like measuring which gives "an overall value to a quantity along a certain dimension" (Li & Rothstein, 2012, p. 723).

To the best of my knowledge, Li and Rothstein's (2012) analysis is unique in proposing a syntactic and semantic account of why high round numbers (optionally or obligatorily) allow the dropping of the classifier. Thus, split analyses have been offered even for prototypical classifier constructions involving regular counting classifiers.

2.4 Classifier – measure term interaction

Recall from Section 1.3.3 that classifiers and measure terms seem to stand in complementary distribution. This has fueled a lot of debate over whether classifiers can meaningfully be distinguished from measure words. In this section, I briefly review two lines of analyses concerning the relation between classifiers and measure words.

2.4.1 Unified analyses

Tang (2005) proposes that classifiers and measure words basically instantiate the same function: that of individuating. She bases her analysis on Senft's (2000) observation that

(33) a. Sortal classifiers individuate in terms of the kind.

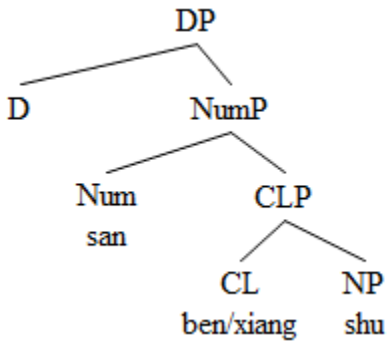
b. Mensural classifiers individuate in terms of quantity.

Thus, sortal classifiers (*general* and *specific* classifiers) differ from mensural classifiers (measure words) in having a [+sortal] feature. In Tang (2005), both classifiers and measure words occupy the same head-of-CL position, differing only in their semantic feature. Thus, both the classifier construction in (34a) and the measure construction in (34b) have the uniform structure in (34c).

(34) a. san ben shu
three CL book
'three books'

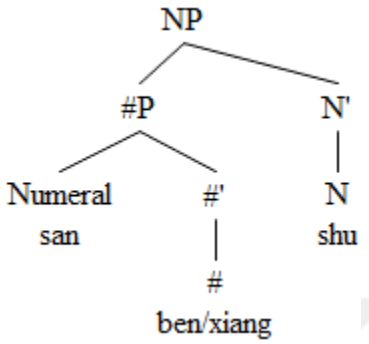
b. san xiang shu
three box book
'three boxes of books'

c. Structure



A parallel account is given in Hsu (2015), who replaces CLP with UnitP. Similarly, Hsieh (2008) inserts both classifiers and measure words into the Num-head position, assigning (35) to both (34a) and (34b).

(35) Structure



The distinction made between "sortal" vs "mensural" classifiers is the telltale sign of the implicit assumption in both models that even though Chinese has count/mass distinction, it is encoded not at the lexical level but in the CL/# layer, making such elements obligatory. In Chapter 4, I propose a uniform syntactic account of classifier and measure constructions that parallels Hsieh's (2008) model; but crucially, both classifiers and measure words will be argued to instantiate varying values of μ.

2.4.2 Split analyses

The other line of analyses pursued in Cheng and Sybesma (1999), Borer (2005), and Zhang (2009; 2011a) argues basically that classifiers and measure words head different syntactic positions. This is motivated on several observations. First, measure words are a mundane property of all world languages while classifiers distinguish languages like Turkish and Chinese from the crowd. Second, measure words are substantive while classifiers are not. Thus, as Zhang (2011a) notes,

measure words create an opaque domain for adjectival modification in Chinese while classifiers do not, as demonstrated in (36a) on the one hand and (36b, b') on the other.

(36) a. yi {*xiao / da / *hong / *mei*} xiang shu (M)
one small big red pretty box book
'one small/big/*red/*pretty box of books'

b. yi ke *da* pingguo (CL)
one CL big apple

b' yi *da* ke pingguo
one big CL apple
'one big apple'

Third, in Chinese, *de* 'of' can be inserted before the NP in measure constructions but not in the classifier constructions.

(37) a. yi xiang *de* shu (MC)
one box DE book
'one box of books'

b. yi ben (**de*) shu (CLC)
one CL DE book
'one book'

Fourth, the general classifier *ge* can be substituted for a sortal classifier without dramatically affecting the meaning, but not for a measure word.

(38) a. san *ke* pingguo = san *ge* pingguo (CLC)
three CL apple three CL apple
'three apples' 'three apples'

b. san *xiang* pingguo ≠ san *ge* pingguo (MC)
three box apple three CL apple
'three boxes of apples' 'thee apples'

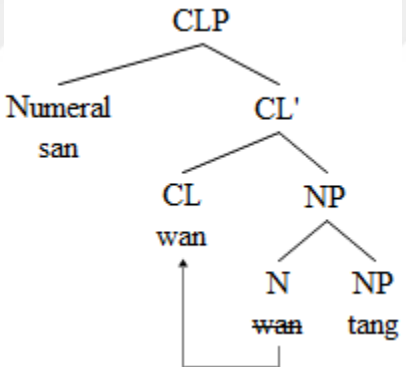
Fifth, classifiers contrast with measure words in being a closed set, which is typical of functional elements. Thus, in Turkish, a typical count word can function as a measure expression.

(39) Sınav-a üç *salon* (dolusu) aday katıl-dı.
exam-DAT three hall full candidate attend-PST
'Three hall(full)s of candidates took the exam.'

Regarding the co-occurrence restriction, analyses differ. In Cheng and Sybesma (1999), classifiers are generated in CL-head position while Ms are generated under N and obligatorily raise to CL.

(40) a. san wan tang
three bowl soup
'three bowls of soup'

b. Structure

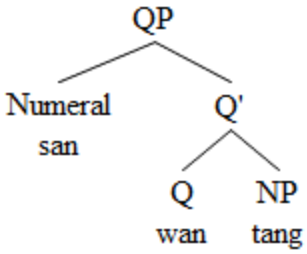


Zhang (2009), however, base-generates Ms in the Q-head position and CLs in the Sort-head position. Q carries "counting" semantics, while Sort classifies/divides. CLs then raise to Q, eventually targeting the same slot as M words.

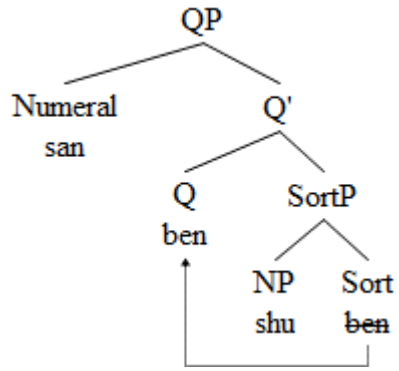
(41) a. san wan tang
three bowl soup
'three bowls of soup'

b. san ben shu
three CL book
'three books'

a'. Structure



b'. Structure



In short, split analyses attempt to capture the ban against the co-occurrence of classifiers and measure words while at the same time keeping their semantics distinct. However, despite the general tendency to view classifiers and measure words as different types of entities, there is disagreement as to whether the difference is lexical or structural, and if structural, how to capture it.

2.5 Number marking

Violations under well-defined contexts aside, it is generally the case that CLs and PL markers cannot co-occur, which begs the question why. Answering that question necessarily requires making certain assumptions about the syntax and semantics of Number. In this section, I lay down some theories of number marking, and discuss how they might help answer the question.

2.5.1 Link (1983)

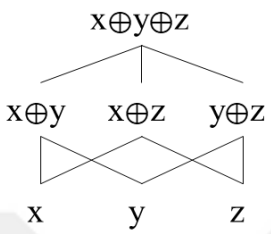
There are three contrasting lines of argument on the syntax and semantics of plural marking. One line, due to Link (1983), argues that plural marking is actually interpreted on nouns. The analysis is basically as follows. A noun like *student* denotes a set of individuals; and plural markers introduce a *-operator on top of the singular noun. The function of this operator is to constitute all possible sets out of the

individuals in the domain of the singular, with numerals serving as restrictive modifiers.

(42) a. ⟦NP⟧ = {x, y, z}

b. ⟦NP-PL⟧ = *⟦NP⟧ = {x, y, z, x⊕y, x⊕z, y⊕z, x⊕y⊕z}

c. Schematic representation



In this model, singular nouns are unmarked both syntactically and semantically; in fact, their extension is basically identical to that of a root. Plural nouns, however, are marked: They contain structure that singulars lack. The extension of a plural is defined in relation to its singular counterpart through the *-operator.

Note that in this model, a singular count noun denotes atomic elements in the bottom line, i.e. x, y, and z; while a plural count denotes the atomic elements in the middle and top lines, i.e. x⊕y, x⊕z, y⊕z, x⊕y⊕z. Mass nouns like *furniture*, on the other hand, denotes all the atoms in the bottom, middle and top lines, i.e. they do not differentiate between singleton sets vs sums. What determines which form of the noun is used in counting contexts? The answer is compatibility, which is the relevant aspect of the proposal for our purposes. Take the expression *three student*(s)*, and consider how it is derived. Assuming a universe with just three students *John*, *Bill*, and *Mary*, we have (43) as the extensions of the singular and the plural forms. Now that *three* targets sets containing three individuals, the plural must be used as the singular form does not provide groups of three. In other words, *three student* is

undefined. As for the definite contexts, it has been argued that the definite article *the* selects the maximal set contained in the extension of the noun. Thus, *the student* would return either of *John, Bill,* or *Mary,* but *the students* would necessarily return the maximal set, i.e. {John⊕Bill⊕Mary}.

(43) a. ⟦student⟧ = {J, B, M}

b. ⟦students⟧ = {J⊕B, J⊕M, B⊕M, J⊕B⊕M}

This model has received a lot of credit in analyses of number marking; but it is not flawless. First, note that in a number of languages, classifier or non-classifier, numerals are used with bare nouns. In Turkish, for instance, the ungrammaticality of (44) shows the obligatorily bare noun requirement in the presence of a numeral, unlike English.

(44) üç öğrenci(*-*ler*)
three student-PL
'three students'

Second, in lexically derived contexts, all languages to the best of my knowledge use bare forms of nouns even when their extension necessarily includes plurals.

(45) a. a five-star(*-*s*) hotel

b. üç çocuk(*-*lar*)-lu aile
three child-PL-DRV family
'a three-child family'

Third, a plural noun is also used with clearly non-plural numbers, a fact also observed in Krifka (2004, p. 192). It is as if the singular has a more restricted distribution in English than the plural.

(46) 0.5/0, no apple*(-s)

The problem seems to be this: Natural languages need to express three number-related aspects of nouns, namely singular, plural, and number-neutral. Nevertheless, the majority of them only have a two-way morphological distinction: singular/unmarked vs plural. The solution is that two functions are assigned to one form. Apparently, some languages (e.g. Turkish) choose to encode number-neutrality in the bare form, while others (e.g. English) do so with the plural form.

This makes an interesting prediction. If a language has a three-way morphological number distinction on its nouns, singular contexts will require singular forms, plural contexts plural forms, and number-neutral contexts the number-neutral forms, with no overlapping. This is precisely the case with a set of words in Arabic. This language has two types of nouns: those exemplified by *tifl* 'child', which have English-style singular/plural contrast; and those exemplified by *burtogaal* 'orange', which have a three-way singular/plural/number-neutral contrast. (47b) establishes that, with the second group, a number-neutral form is obligatory in downward entailing contexts, confirming our prediction.

(47) a. child *tifl* (SG), *ʔaṭfaal* (PL/number neutral)

hal ʕindik {**tifl* / *ʔaṭfaal*}?
QUES have.2SG child children
'Do you have children?'

b. orange *burtogaal* (number-neutral), *burtogaala(h)* (SG), *burtogaalat* (PL)

hal ʕindik {*burtogaal* / **burtogaala(h)* / **burtogaalaat*}?
QUES have.2SG oranges orange oranges
'Do you have oranges$_{NEUT}$?'

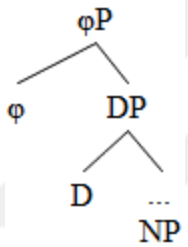
The gist of the data is that plural markers do not always encode plurality across languages.

Finally, Link's system does not tell why and how classifiers and plural markers are related so as to yield the apparent complementary distribution.

2.5.2 Sauerland (2003)

Another account of number marking that has attracted much attention is that of Sauerland (2003), and Sauerland and Yatsushiro (2005), who argue more or less the opposite of Link (1983). According to Sauerland, number marking is never directly interpreted on the NP. The only semantically relevant number features are contained in a φ-head which takes the DP as a complement.

(48) Number marking



In languages like English, number markers on the NP arise as a reflex of agreement with the φ°. Contra Link (1983), Sauerland argues that it is the singular that is semantically marked rather than plural. In his model, number markers are interpreted as identity functions of type <e,e> which introduce certain presuppositions regarding their complements. More specifically, the singular form carries with it a strong singularity presupposition, while the plural has no presupposition at all. Thus, in English, *student* is more marked than *students*.

According to Sauerland's, the plural includes the extension of singular as a proper subset, leading to number-neutral interpretations. Thus, a question arises as to why (49) is ungrammatical under a number-neutral interpretation. After all, *students* does include atoms in its extension.

(49) *The *students* is absent.

To answer that, Sauerland relies on Heim's (1991) principle of Maximize Presupposition, which basically states that given two contextually equivalent alternatives, the form with the strongest presupposition must be used. Therefore, the presuppositionally stronger *student* should be selected when in competition with the non-presuppositional plural *students*. The absence of singular marking automatically leads the listener to assume that the speaker must have intended the plural. In other words, the ungrammaticality of *one students* is due to a presupposition failure. Thus, whether a singular or a plural is used with *one* is determined pragmatically, not semantically.

Sauerland's proposal helps overcome a number of problems. First, if number markers on nouns are agreement markers with no semantic force, their absence in a wide range of languages receives a natural explanation: These languages simply lack morphological number agreement. This explains the problem of typology.

Second, if number markers automatically signal the DP status of the nominal, the problem of indefiniteness is also explained. Recall Erbaugh (1984), Hopper (1986), and Aikhenvald's (2003) observation that classifiers typically mark the first mention of a discourse entity, suggesting that they lack the DP layer. Thus, the lack of plural marking in classifier constructions follows from Sauerland's proposal that number is only relevant for DPs.[13] This is further supported by the observation that bare plurals receive a definite reading in argument positions.

[13] A language can still allow agreement between the QP and the NP, which is might be the case in languages like Western Armenian.

(50) Definiteness effect[14]

a. Öğrenci-*ler* gel-di. (Turkish)
student-PL come-PST
'The/*Some students came.'

b. ostad-*ha* (Persian)
teacher-PL
'the/*some teachers'

Thus, the problem of classifier/number complementarity pointed out in Section 1.3.2, and the obligatorily indefinite readings of classifier constructions mentioned in Section 1.3.6 receive a natural explanation.

Sauerland presents several pieces of evidence supporting his analysis; and I demonstrate in Chapter 6 that this model has the added advantage of accounting for some intriguing properties of Plural Pronoun Constructions (PPCs). But since these are not strictly relevant for our current purposes, I will not go into details here.

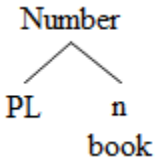
2.5.3 Others

Alexiadou (2011) develops a theory according to which number marking can be lexical as well as syntactic. The theory is based on PL-marked mass nouns in Greek, which can receive slightly different interpretations from their non-PL-marked counterparts. The gist of the proposal is that on count nouns plural marking is syntactic and gives rise to a "more than one X" interpretation; while on mass nouns it is lexical and gives rise to deviant interpretations like "abundant plural". Alexiadou (2011) assigns the following representation to the two plurals respectively.

[14] See Section 5.5.1 for counterarguments.

(51) a. Syntactic PL

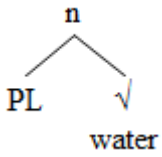
vivlia 'book-PL'



Semantics: ⟦PL (book)⟧

b. Lexical PL

nera 'water-PL'

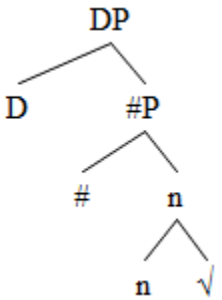


Semantics: ⟦water & PL⟧

Alexiadou's (2011) analysis also has the potential to account for cases like the Spanish *padre-s* 'parents (lit. father-PL)' in which the contribution of the plural is rather unpredictable. Assuming the lexicon to be the locus of all idiosyncrasy, deviant interpretations must not be dealt with syntactically, which is the position Alexiadou (2011) takes. However, since her account has no bearing on classifier constructions, I leave it here.

Wiltschko (2008) provides an analysis according to which plural marking is not universally inflectional. Further, plural markers neither always head the functional projection Num, nor do they always combine with nouns. The upshot of the proposal is that plural marking can in principle target any head or maximal projection in (52).

(52) PL marking



Wiltschko (2008) presents several pieces of evidence demonstrating that plural markers in Halkomelem Salish (a Salishan language spoken in Canada) adjoin

to the acategorial root below the nP.[15] Part of the evidence, which is directly relevant for our purposes, is that in contrast to Armenian, Halkomelem Salish allows plural markers and classifiers to co-occur in the same construction.

(53) a. tsel kw'éts-l-exw (te) yéys-*ele* slhélhàli. (Halkomelem Salish)
1SG.S see-TRANS-3O DET two-CL woman.PL
'I saw two women.'

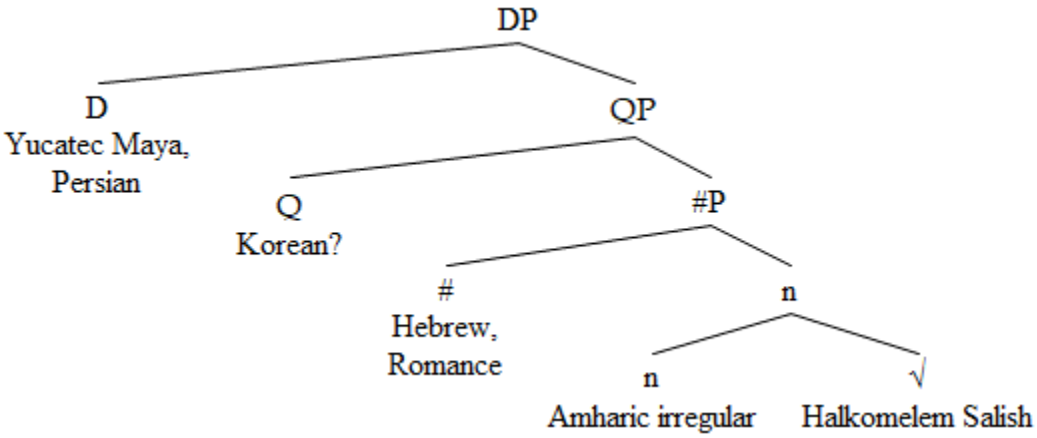
b. yergu *had* hovanoc(*-ner) uni-m. (Armenian)
two CL umbrella-PL have-1S
'I have two umbrellas.'

Wiltschko (2008) assumes the classifier/number complementarity to be essentially correct and proposes that the contrast between Armenian and Halkomelem Salish follows from a difference in the categorial identity of the plural markers in either language. In Armenian, both classifiers and plural markers target the functional head # of (52), causing competition. In Salish, however, classifiers target the #-head while plural markers target the √, hence no competition. This facilitates their co-occurrence in Halkomelem Salish but not in Armenian.

Building on Wiltschko's (2008) analysis, Butler (2011; 2012a) argues that Yucatec Mayan plural markers adjoin to DP. She demonstrates that such an assumption allows for a natural explanation of several properties of plural markers, including the fact that they can co-occur with classifiers (the complementarity problem), and the obligatorily definite interpretation of plural-marked nouns (definiteness effect). Butler (2011; 2012a) then proposes the following exemplary typology of crosslinguistic plural marking.

[15] The evidence includes the optionality of plural marking on the noun in the context of numerals greater than one, optionality of plural determiners with plural nouns, availability of plural marking on the non-heads of compounds, availability of plural marking in derivational processes, and failure of plural morphology to determine the categorial identity of the phrase.

(54) PL marking typology[16]



This representation predicts a wide range of interpretations the noun would have depending on where the plural marker stands. Whether this is the case should be further studied, especially in languages that allow contrasting forms of plural marking. But as it stands, there is at least one piece of, to my mind conclusive, evidence against this model. Considering its complementarity with the classifier *tane*, Wiltschko (2008) and Butler (2011; 2012a) would presumably classify Turkish plural marker *-lAr* as a head occupying #. On the other hand, the fact that Turkish *-lAr* induces definiteness effects, like Yucatec Mayan and Persian, suggests that it is DP-adjoined, leading to the opposite conclusion. The argument thus leads to a contradiction.

Further, the availability of plural readings in the absence of a plural marker does not necessarily mean that the plural marker sits in an adjoined position. If such data suggests anything at all, it is probably the fact that these number-neutral nouns lack the number-related projection altogether.

[16] Biswas (2013; 2014) argues similarly that Bangla (an Indo-Aryan language spoken in Bengal) has two plural markers: *-gulo* and *-ra*. The former heads NumP and yields an additive interpretation, while the latter heads a functional projection above the DP and yields an associative interpretation. Dayal (2014), however, analyzes both *-gulo* and *-ra* as plural counterparts of the singular classifier *-TA*.

2.6 Summary

In this Chapter, I reviewed earlier proposals on four major issues surrounding classifier constructions: (i) the problem of classifier typology, (ii) the internal structure of classifier constructions, (iii) the complementarity of classifiers and measure words, and (iv) number marking in classifier constructions.

Discussing the problem of typology in Section 2.2, we have seen Chierchia's (1998a) noun-based account according to which all nominals of classifier languages are mass-denoting, and thus inherently plural. Therefore, a classifier is obligatory to reach the atomic instantiation of the kind. Krifka (1995), on the other hand, relates the contrast to a difference in the denotation of numerals: Numerals of non-classifier languages are lexically specified with μ and thus can count object and kind entities, while those of classifier languages are not. Therefore, a classifier is used obligatorily to spell out μ. Borer (2005), however, takes all nominals of all languages to be underspecified with respect to the count/mass contrast, which she takes to be a function of syntactic context. Countability requires division of the noun into countable units, which is done by plural morphology in non-classifier languages and by classifiers in classifier languages. We have also seen that among these proposals, Krifka's (1995) account comes closest to explaining a wide range of crosslinguistic data including Turkish.

Concerning the syntactic constituency of classifier constructions discussed in Section 2.3, we have reviewed Cheng and Sybesma (1999; 2005), Tang (2005), and Zhang's (2009) right-branching analyses in which the classifier first combines with the noun; Croft (1994), and Hsieh's (2008) left-branching analyses in which it first combines with the numeral; and Zhang (2011a), Rothstein (2011), and Li and

Rothstein's (2012) split analyses according to which some classifier constructions are associated with right-branching syntax and others with left-branching syntax.

Section 2.4 addressed classifier-measure word relation, with the question of whether they can meaningfully be distinguished syntactically or semantically. Here, we went through the unified analyses offered in Tang (2005), Hsieh (2008), and Hsu (2015), according to which classifiers and measure words target the same structural slot in syntax; and the split analyses offered in Cheng and Sybesma (1999), Borer (2005), and Zhang (2009; 2011a), which assign a right-branching structure to classifier constructions and a left-branching structure to measure constructions.

I then turned to the problem of how plural markers interact with classifiers in Section 2.5. We have seen Link's (1983) lattice theoretic approach, according to which takes plurals are formed by closure of singular nouns under sum formation and thus contain more structure than singulars; Suerland's (2003) account according to which semantically relevant Number features are contained in a φP above the DP, an analysis which treats number markers on nouns as agreement reflexes; and Wiltschko's (2008) multi-layer account according to which, language-specifically, plural marking can be lexical as well as inflectional, and can target any head or maximal projection within the nominal spine.

CHAPTER 3

SEMANTICS OF TURKISH NOUN PHRASES

3.1 Introduction

In this chapter, I address the issue of what bare nouns phrases (BNPs) denote in Turkish. Three issues are addressed in particular: (i) the denotation of Turkish singular, plural, and number-neutral bare nouns, (ii) the domain of entities these refer to, and (iii) the function of classifiers and kind terms. The issue of bare noun denotation is particularly important for the problem of classifier typology, i.e. why languages like Chinese obligatorily require the presence of classifiers in the context of numerals, those like Turkish optionally allow them, and non-classifier ones seemingly lack such elements.

Earlier proposals on bare noun denotation are briefly reviewed in Section 3.2 where I discuss the (Neo)Carlsonian view according to which bare nouns strictly denote kind, and their indefinite readings are due to an operator they are associated with; the ambiguity view according to which they are inherently ambiguous as to whether they denote kinds or indefinites; and the property-only view which argues that they uniformly denote properties but can be type-shifted to kind or indefinite readings.

In Section 3.3, I lay down some properties of Turkish bare nouns and discuss their denotation. I demonstrate in particular that Turkish bare nouns are both kind-referring and indefinites, supporting the ambiguity analysis. It is shown that a singular Turkish bare noun denotes both an object and a subkind, while bare plurals denote pluralities of either objects or subkinds. As such, a construction involving a bare noun is shown to be ambiguous, unless other factors strongly favor one reading

over the other. I further demonstrate that the presence of a classifier uniformly singles out the object reading, blocking reference to kind.

In Section 3.4, I sketch out what domain Turkish count and mass nouns take. Here, I first lay down what count singular, plural, and number-neutral count nouns denote, and then move onto mass nouns. I argue that Turkish does have count/mass distinction as evidenced by the combinatorial possibilities of some quantifiers, and viewpoint of some denominal verbs derived on count/mass nouns. I also provide data suggesting that mass nouns, too, are ambiguous with respect to whether they take kinds or objects as their domain.

Section 3.5 integrates classifiers and kind terms into the emerging picture. It is argued that they serve as restrictive modifiers that restrict the domain of entities to object and kind readings respectively. This conclusion is further supported by crosslinguistic data demonstrating that classifiers universally block reference to kinds, and that their absence yields an ambiguous interpretation in all languages. This line of reasoning is shown to readily account for the distribution of a set of under-studied nouns that resist classifiers and/or kind words and have so far been analyzed under an N-to-CL raising.

3.2 Theories of bare nouns

3.2.1 (Neo-)Carlsonian approach

One line of analyses, led by Chierchia (1998a; 1998b) among others, argues that bare nouns are always proper names of kinds, and thus are non-quantificational constructs. This camp is also referred to as the (Neo)Carlsonian camp, as Carlson (1977) is credited for its initial formulation. In this model, the apparent indefinite

reading of bare nouns is attributed to the properties of episodic verbs, and is derived from the kind reading by an existential operator, overt or covert. Thus, *potatoes* in both (1a) and (1b) denote the POTATO kind, i.e. TUBER TUBEROSUM, only that there is an existential operator in (1b) which, when applied to the kind, extracts a specimen belonging to that kind, namely an actual potato.

(1) a. *Potatoes* were first cultivated in South America. (kind)
first-cultivated-in-South-America(potato)

b. *Potatoes* rolled out of the bag. (existential)
$\exists x$ [potato(x) $\wedge$ rolled-out-of-the-bag(x)]

In Chierchia (1998a; 1998b), *e*-type kinds are initially derived from their corresponding <e,t>-type properties through the nominalization (down) operator $\cap$. But kinds can also be type-shifted into indefinites by the predicativization (up) operator $\cup$, which is then bound by $\exists$, yielding the existential reading.

(2) a. *Potatoes* were first cultivated in South America. (kind)
first-cultivated-in-South-America($^{\cap}$potato)

b. *Potatoes* rolled out of the bag. (existential)
$\exists$ x [$^{\cup\cap}$potato(x) $\wedge$ rolled-out-of-the-bag(x)]

Several pieces of evidence have been presented for the kind-referring analysis, which I cite but do not detail here, referring the interested reader to Krifka (2004). First, Carlson (1977) argues that whether a bare noun receives a kind or indefinite reading is largely a reflex of the predicate: generic reading with kind-level predicates and non-generic reading with episodic/stage-level predicates. Second, anaphoric binding is possible across kind- and seemingly object-referring nouns.

(3) John bought *potatoes* because <u>they</u> contain vitamin C.

Here, *potatoes* has a clear object reference, as it can serve as an argument to the episodic predicate *bought*. However, the pronoun *they* also has a clear kind reference, supporting Carlson's (1977) argument that bare nouns initially have kind reference and that other readings are derived.

Krifka (2004), however, observes that anaphoric binding cases that Carlson (1977) adduces in favor of his kind-only account is also possible with non-bare singular/plural indefinites, which are clearly quantificational.

(4) John bought *a potato* / *some potatoes* because it/they contain(s) vitamin C.

Third, Chierchia (1998b) argues that bare nouns contrast with indefinites in having obligatorily narrow scope with respect to other operators. In (5c), for example, the bare noun *doctors* takes narrow scope w.r.t. the intentional verb *look for*, suggesting that it denotes in the kind domain.

(5) a. John is looking for *a doctor*. *(look for > a doctor | a doctor > look for)*

b. John is looking for *some doctors*. *(look for > some | some > look for)*

c. John is looking for *doctors*. *(look for > doctors | *doctors > look for)*

Zamparelli (2002) however observes that the obligatorily narrow scope could be because the noun lacks a DP layer, not because it denotes a kind. Indeed, when a rigid modifier is inserted (in which case the noun projects to a QP), the bare plural can take wide scope, undermining Chierchia's (1998b) argument.

(6) John is looking for *doctors who know about metallurgy*.
(look for > doctors | doctors > look for)

Thus, bare plurals do not necessarily have to be associated with kind denotations. An alternative explanation for the status of these nominals could be that they are incorporated as part of the verbal complex, lacking an independent status as has been argued for Turkish (Öztürk, 2005), Spanish and Catalan (Espinal & McNally, 2011), as well as Russian (Kagan & Pereltsvaig, 2011). If so, such nouns are property-denoting entities that act as modifiers of the verb.

In support of the kind-only analysis, it has also been argued that episodic and kind level predicates can be conjoined.

(7) ??*Frogs* are reptiles and are croaking right now in front of my window.
(Krifka, 2004, p. 182)

The grammaticality of (7) would be predicted if both instances of *frogs* denoted the kind at the point in the derivation where coordination applied, with subsequent conversion of the second copy to an indefinite. The grammaticality of such examples has been called into question, though.

3.2.2 Ambiguity approach

Another line of research pioneered by Wilkinson (1991), Diesing (1992), Gerstner and Krifka (1993), Dobrovie-Sorin (1997), and Dayal (2004) argues that bare nouns are ambiguous as to whether they denote kinds or indefinites. The existential reading of bare nouns is derived when the free variable provided by indefinite reading is bound by ∃. In what follows, superscripts *k* and *o* indicate kind/object readings respectively.

(8) a. *Potatoes* were first cultivated in South America. (kind)
first-cultivated-in-South-America(potato^{k})

b. *Potatoes* rolled out of the bag. (existential)
∃ x [potatos^{o}(x) ∧ rolled-out-of-the-bag(x)]

In this model, predicates of different types play a crucial role in selecting the appropriate denotation of the bare noun.

Several arguments have been advanced for the ambiguity analysis. First, in contrast to the Carlsonian view which treats both bare nouns and definite singular ones as kind-referring, the two give rise to different interpretations in episodic contexts.

(9) a. *Potatoes* rolled out of the bag. (existential)
∃ x [potato(x) ∧ rolled-out-of-the-bag(x)]

b. *The potato* rolled out of the bag. (definite)
rolled-out-of-the-bag(ιx [potato(x)])

Second, Carlson (1977) himself observes that *hurricanes* in (10) can have two different readings, i.e. kind (10.i) and indefinite (10.ii).

(10) *Hurricanes* arise in this part of the Pacific.

i. For hurricanes it is the case that they arise in this part of the Pacific.
ii. For this part of the Pacific it is the case that hurricanes arise here.

The third piece of evidence for the ambiguity view comes from Romance languages which, to the best of my knowledge, do not allow bare nouns, either singular or plural, to occur in argument positions unless properly governed (Longobardi, 1994). Now that kinds are referential in some sense, this distribution would not be predicted if bare nouns uniformly denoted kinds.

3.2.3 Property-only approach

In a later work, Krifka (2004) proposes that bare nouns are not kind-denoting entities or indefinites per se, neither are they ambiguous. In fact, all bare nouns denote properties, which can be type-shifted to kinds or indefinites in appropriate contexts. This view takes bare nouns to be more basic in denotation that has so far been assumed.

Krifka (2004) goes through lengthy argumentation to demonstrate that the type-shifting mechanisms are powerful enough for us to dispense with the (neo)Carlsonian view and the ambiguity view altogether. For reasons of space, I will not detail Krifka's (2004) evidence here, referring the interested reader to his article.

3.3 Denotation of Turkish bare nouns

In this section, I address the denotation of Turkish bare nouns. I assume with Wilkinson (1991), Diesing (1992), and Gerstner and Krifka (1993), among others, that Turkish bare nouns are ambiguous as to whether they denote in the kind or object domain. I demonstrate below that this line of reasoning can immediately explain a number of distributional properties of Turkish bare nouns.

3.3.1 Kind-object ambiguity

First, a Turkish bare noun can refer to both a kind and an object entity.

(11) a. *İnsan* maymun-dan evril-di. (kind)
human ape-ABL evolve-PST
'Humans evolved from apes.'

a'. *Patates* ilk kez Güney Amerika-'da yetis-tir-il-di.
potato first time south america-LOC cultivate-CAUS-PASS-PST
'Potatoes were first cultivated in South America.'

b. Sınıf-ta *öğrenci* yok. (object)
classroom-LOC student exist.NEG
'There are no students in the classroom.'

b'. *Öğrenci* nere-de?
student where-LOC
'Where is the student?'

Therefore, constructions lacking a classifier are globally ambiguous as to whether they refer to kind or object. As such, the numeral construction in (12a) can be continued with reference to either a kind (12a.i) or an object (12a.ii) entity, suggesting that *araba* 'car' is ambiguous. This applies to demonstrative constructions as well (12b).

(12) Kind/object ambiguity

a. Galeri-miz-de iki *araba* var:
gallery-1PL.POSS-LOC two car exist
'There are two cars in our gallery.'

i. VW ve Audi. (kind)
'VW and Audi'

ii. biri kırmızı, diğeri mavi. (object)
'one is red, the other is blue.'

b. Bu *araba* çabuk bozul-uyor.
this car fast break-down-IMPF
'This breaks down fast.'

i. this kind of car, e.g. Audi (kind)
ii. this particular car (object)

The kind/object ambiguity of Turkish bare nouns persists unless contextual factors strongly favor one reading over the other. In particular, the denotation of bare nouns is strongly biased towards the object reading when a high number is present, as we do not typically talk of too many kinds.

(13) Object bias[17]

Galeri-miz-de *seksen araba* var. (*kind/object)
gallery-1PL.POSS-LOC eighty car exist
'There are eighty cars in our gallery.'

Nomoto (2013) observes that this kind/object ambiguity applies crosslinguistically to non-classifier languages like English, optional classifier languages like Persian and Malay, and obligatory classifier languages like Japanese that allow [demonstrative-NP] constructions (recall that some obligatory classifier languages require a classifier between the demonstrative and the noun).

(14) BNP ambiguity

a. English (non-CL)

three magazines

i. three kinds of magazine, e.g. car magazine (kind)
ii. three particular magazines (object)

b. Malay (optional CL)

tiga majalah
three magazine 'three magazines'

i. three kinds of magazines, e.g. Mastika (kind)
ii. three copies of magazines (object)

c. Thai (obligatory CL)

rót níi
car this 'this car'

i. this kind of car (kind)
ii. this particular car (object)

[17] Note that the object bias of high numerals is a crosslinguistically ubiquitous pattern. Nomoto (2013, p. 23), for instance, observes that "large numbers bias towards an object reading" in Persian. In a similar vein, Zhang (2011a, p. 23) states that "if a numeral denotes a very high round number, a CL is optional for a non-mass noun", while Aikhenvald (2003, p. 100) notes that classifiers are "obligatory with smaller numbers, and optional with larger ones." The optionality of classifiers with large numerals squares with the proposal I am defending here that classifiers restrict the domain to object entities. If context strongly favors the object reading, the use of a classifier becomes redundant. This suggests that object bias and optionality of classifiers with high numerals are pragmatically related.

Thus, this pattern seems to be more widespread than hitherto assumed.

3.3.2 Disambiguation with classifiers

Second, although bare nouns are inherently ambiguous with respect to the domain they pick, the presence of a classifier immediately rules the kind reading out.

(15) Classifier disambiguation

Galeri-miz-de iki *tane* araba var:
gallery-1PL.POSS-LOC two CL car exist
'There are two cars in our gallery.'

i. *VW ve Audi. (kind)
'VW and Audi'

ii. biri kırmızı, diğeri mavi. (object)
'one is red, the other is blue.'

Note that Turkish does not allow [Dem-CL-NP] combinations (cf. **bu tane araba* 'this CL car'), but in languages that do so, the noun automatically refers to object individuals.

Nomoto (2013) presents Table 10 which demonstrates that classifiers crosslinguistically block reference to kind/subkind, provided that the language in question allows the construction.

Thus, we arrive at a crosslinguistic function of classifiers in general: They take the object domain of an otherwise ambiguous bare noun.

Table 10. Classifier Disambiguation Crosslinguistically

	Language	Example	Kind	Object
		Expressions Without a CL		
[Numeral-NP] / [NP-Numeral]	Japanese	**zassi san* magazine three	---	---
	Cantonese	**sāam jaahpji* three magazine	---	---
	Malay	*tiga majalah* three magazine	√	√
	Persian	*bist majalle* twenty magazine	√	√
	English	*three magazines*	√	√
[Demonstrative-NP] / [NP-Demonstrative]	Japanese	*kono kuruma* this car	√	√
	Cantonese	**lī chē* this car	---	---
	Thai	*rót níi* car this	√	√
	Malay	*kereta ini* car this	√	√
	Persian	*in mâšin* this car	√	√
	English	*this car*	√	√
		Expressions With a CL		
[Numeral-CL-NP] / [NP-Numeral-CL]	Japanese	*zassi sansatu* magazine three CL	*	√
	Cantonese	*sāam bún jaahpji* three CL magazine	*	√
	Malay	*tiga buah majalah* three CL magazine	*	√
	Persian	*bist tâ majalle* twenty CL magazine	*	√
	English	**three CL magazines*	---	---
[Demonstrative-CL-NP] / [NP-Demonstrative-CL]	Japanese	**kono dai kuruma* this CL car	---	---
	Cantonese	*lī ga chē* this CL car	*	√
	Thai	*rót khan níi* car CL this	*	√
	Malay	**kereta buah ini* car CL this	---	---
	Persian	**in tâ mâšin* this CL car	---	---
	English	*this CL car*	---	---

(Nomoto, 2013, p. 28)

3.3.3 No kind reference with plural bare nouns

Third, bare plurals in Turkish can readily refer to the subkind but not are good examples to refer to the kind.[18]

(16) Kind reference with bare plurals

a. Bu ders-imiz-de *transistör-ler*-i işle-yeceğ-iz.
this class-1PL.POSS-LOC transistor-PL-ACC study-FUT-1PL
'In this class, we will study transistors.'

i. *the transistor kind (kind)
ii. kinds of transistors (subkind)

cf. **Transistör-ler* 1947'de icat ed-il-di.
Transistor-PL 1947-LOC invention do-PASS-PST
'The transistor was invented in 1947.'

b. **Patates-ler* ilk defa Güney Amerika-'da yetiş-tir-il-di.
potato-PL first time south america-LOC cultivate-CAUS-PASS-PST
Int.: 'Potatoes (i.e. the potato kind) were first cultivated in South America.'

b'. **Portakal-lar* bol miktar-da C vitamini barındır-ır.
orange-PL ample amount-LOC C vitamin include-AOR
Int.: 'Oranges (i.e. the orange kind) involves ample amounts of Vitamin C.'

In (16a), the bare plural *transistörler* 'transistors' cannot be used to refer to the kind, in sharp contrast to its singular form *transistor* 'transistor'. However, it can refer to subkinds of transistors, and thus is a good candidate as a textbook chapter title where types of transistors are discussed. (16b-b') are plain ungrammatical presumably because *potatoes* and *oranges* do not have subkinds in most people's taxonomy.[19]

[18] Recall that, for some yet unknown reason, animate bare plurals of Turkish can actually refer to the kind. Building on Grimm's (2012a; 2012b) Number-individuation continuum, Uygun-Gökmen (2019) observes that whether a plural noun can refer to the kind closely interacts with the individuation level of its referent. Plurals encoding entities like liquids/substances that appear at the least individuated end of the continuum are much worse as kind referrers than those like individual entities that appear at the most individuated end. The issue of whether a given plural noun can refer to the kind is thus a complex one, beyond the scope of this work. Abstracting away from the technical details, I illustrate the discussion with inanimate bare plurals. See Uygun-Gökmen (2018) for a comparison of singulars and plurals in other generic contexts.

[19] Note that subkind here is used in a technical sense, intended to refer to naturally available taxonomies (well-defined kinds) but not to non-well-defined kinds in the sense of Carlson (1977) or

The conclusion then is that Turkish bare plurals can potentially refer to the subkind but not kind. In the object domain, however, there is no restriction, and bare plurals can refer to pluralities of objects.

(17) Object reference with bare plurals

a. *Transistör-ler* burada.
transistor-PL here
'The transistors are here.'

b. *Patates-ler-i* yıka-dı-n mı?
potato-PL-ACC wash-PST-2SG QUES
'Have you washed the potatoes?'

c. *Portakal-lar-ı* soy.
orange-PL-ACC peel
'Peel the oranges.'

Nomoto (2013) observes the same no-kind-with-bare-plurals constraint in Japanese (18a), Malay (18b), Jingpo (18c), and Persian (18d).

(18) Kind reference with bare plurals crosslinguistically

a. *Kyooryuu(*-tati)*-wa zetumetusi-ta. (Japanese)
Dinosaur-PL-TOP become.extinct-PST
'Dinosaurs became extinct.'

b. *Telefon(*-telefon)* di-cipta oleh Bell pada tahun 1876. (Malay)
telephone-PL PASS-invent by Bell at year 1876
'The telephone was invented by Bell in 1876.'

c. 1876 ning e Bell gaw *fon(*-ni)* sawk gyin ai. (Jingpo)
1876 year in Bell TOP telephone-PL invent SFP
'Bell invented the telephone in 1876.'

categorizations based on properties like shape (e.g. *round potatoes*) and taste (e.g. *sweet potatoes*). Nomoto (2013, p. 33) further observes that taxonomic hierarchies are "psychological rather than linguistic", meaning that taxonomic relations are affected by one's worldview or knowledge/expertise of the relevant entities. This allows for a certain degree of variation between individuals as well as over time. Thus, although horticulturists can talk about kinds of potatoes and oranges, most individuals lack such an organization in their taxonomy, hence the ungrammaticality of (16b-b').

d. Bel *telefon(*-ha)*-râ exterâʔ kard. (Persian)
Bel telephone-PL-OM invent did
'Bell invented the telephone.'

(Nomoto, 2013, pp. 31-32)

Thus, we seem to have a group of languages that, similar to Turkish but in stark contrast to Germanic and Romance languages, do not allow their bare plurals to denote in the kind subdomain. I argue in the upcoming section that this follows from the denotation of number-neutral bare nouns in these two groups of languages.

3.4 Domain of individuals

In Section 3.3, I argued, in line with the ambiguity camp, that Turkish bare nouns are globally ambiguous as to whether they denote kind entities or object entities. I further demonstrated that classifiers block reference to kind, and that bare plurals can potentially refer to the subkind but not kind. In this section, I lay down what domain Turkish bare nouns take in their several number-related forms.

Carlson (1977) argues that individuals consist of two basic sorts: kind individuals, and object individuals. In what follows, I use e^k and e^o to refer to these two sorts of individuals, and $\langle e^k,t\rangle$ and $\langle e^o,t\rangle$ to refer to their properties respectively.[20] In case the superscripts are missing, the expression is intended to be ambiguous (meaning $e = e^{k/o}$). Link (1983), on the other hand, proposes that the

[20] Note that the properties associated with kind and object individuals may differ. The properties of *evolving* and *becoming extinct* can only be predicated of kind entities (i.a-a') while episodic sentences can only apply to object entities (i.b-b').

(i) a. *Dogs* (i.e. CANIS FAMILIARIS) evolved from wolves.
a'. *My *dog* evolved from wolves.

b. **Dogs* (i.e. CANIS FAMILIARIS) chased a cat.
b'. My *dog* chased a cat.

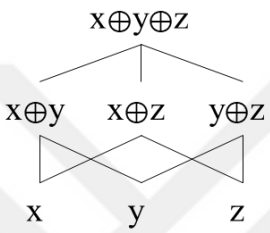
As Zamparelli (2002) notes, however, it is not clear whether certain properties belong specifically to kinds, objects or both. Thus, whether *having four legs* and *barking at the moon* applies to kinds as well as objects is a methodological question.

domain of entities is structured as a complete atomic join semilattice, including singular as well as plural individuals. The plural is the sum of all the singular individuals, represented by $\oplus$, and individuals are ordered by the "part of" relation $\leq$. (19) is repeated from Section 2.5.1.

(19) a. $[\![NP]\!] = \{x, y, z\}$

b. $[\![NP\text{-}PL]\!] = *[\![NP]\!] = \{x, y, z, x\oplus y, x\oplus z, y\oplus z, x\oplus y\oplus z\}$

c. Schematic representation

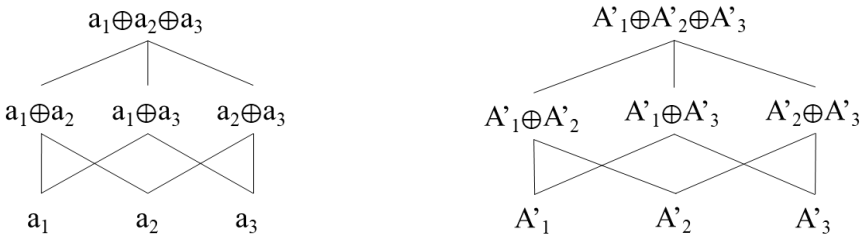


Here, the bare singular targets the bottom line (z, y, and z), and the bare plural targets all lines (x, y, z, x⊕y, x⊕z, y⊕z, x⊕y⊕z). The $\oplus$ is intended to capture the sum forming operation $\sqcup$, and the lines stand in for the $\leq$. Thus, z is also part of x⊕z, y⊕z, and x⊕y⊕z. Notably, this model treats plurals as more complex, and takes them to include atomic individuals as well as their sums. This means that number-neutral reference comes with the plural form (see Section 2.5.1).

Since individuals can consist of two basic types per Carlson (1977), the difference between the two types lies in what the atoms in the domain represent: The domain of object individuals contains objects as atoms, and the domain of kinds contains kinds as atoms. We have, however, seen that Turkish bare nouns are ambiguous with respect to the entity they denote, and that bare plurals can potentially denote object individuals as well as subkinds, but crucially not kinds. Therefore, I follow Nomoto (2013) in proposing that Turkish bare nouns are associated with the domains in (20).

(20) Domain of Turkish bare nouns

a. Object individuals (e^o) / b. Kind individuals (e^k)



Here, I follow Nomoto's (2013) notation in representing object entities in small letters (a) as in (20a), and subkind individuals in capital letters with a prime (A') as in (20b).

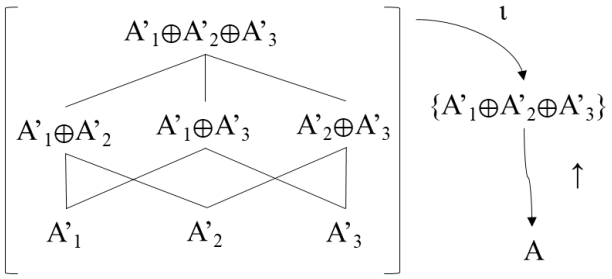
Observe however, that kind is not given in this representation, but we know that Turkish bare nouns can refer to the kind. If so, what domain do these bare nouns take? It cannot be identified with the top line ($A'_1 \oplus A'_2 \oplus A'_3$) in (20b) given the long-established fact that singular kinds are atomic, making reference to their constituent members impossible. Thus, (21b) contrasts with (21a) because the opaque singular kind *the lion* cannot serve as a subject for the verb *compete*.

(21) a. *Male lions* always compete for supremacy.

b. **The male lion* always competes for supremacy.

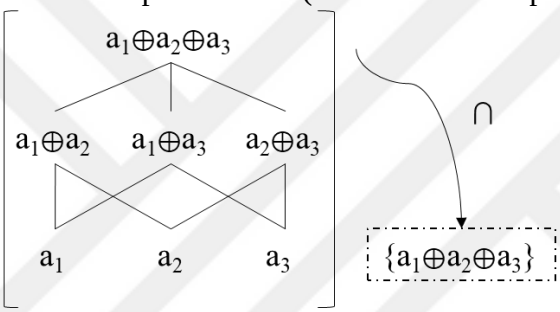
Therefore, the singular kind must denote an atomic entity created from the properties of subkind individuals in the top line of (20b) through Link's (1983) group forming operator ↑, represented as $A = \uparrow (A'_1 \oplus A'_2 \oplus A'_3)$. Schematically speaking, we have (22) as the domain of Turkish singular kinds (represented as A).

(22) Domain of singular kinds (created from the properties of subkind individuals)



Chierchia (1998a), however, argues that kind denotation can also be derived from the properties of object individuals, schematically represented as in (23).

(23) Domain of plural kinds (created from the properties of object individuals)



Here, bare nouns are initially type-<e^o,t> predicates; and plural kinds, also referred to as kind emulations, are derived using Chierchia's (1998a) nominalization (down) operator ∩, and correspond to the totality of the objects in the domain. Thus, we have two different sources for kind terms.

(24) Sources of kind denotation

a. *True kind* (Link, 1983)
This is the singular atomic kind, formed from the properties of subkinds through ↑, and thus denotes in the kind domain. The signature feature of this kind is that it does not allow a see-through relation with its members (cf. (22)).

b. *Kind emulation* (Chierchia, 1998a)
This is the plural non-atomic kind, formed from the properties of objects through ∩, and thus denotes in the object domain. The signature property of this kind is that it allows a see-through relation with its members (cf. (23)).

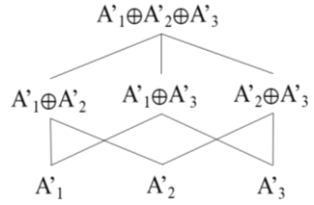
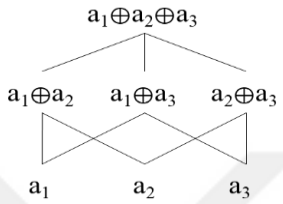
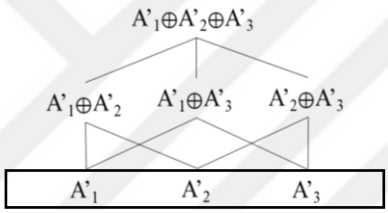
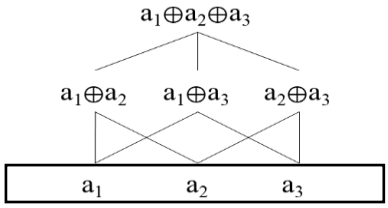
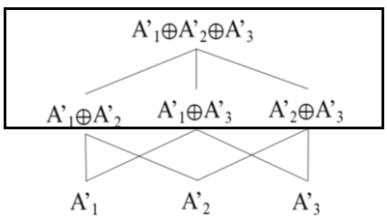
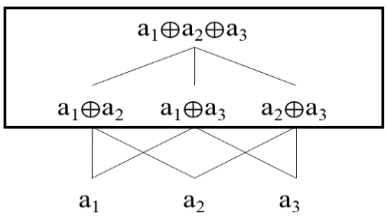
The next logical question is: Why can Turkish bare plurals not denote kind (recall the *transistors* example in (16))? We have seen that bare plurals can denote subkinds. If we want them to denote the kind, we must be targeting the kind emulation in (23), not the true kinds (22). Thus, we can reformulate the question as: Why can Turkish bare plurals not denote kind emulations?

Recall that kind emulations are derived from objects using the ∩ operator. ∩ is undefined for singularities because kinds do not solely refer to singular entities. ∩ is also undefined for pluralities for the same reason. The fact is that a kind denotation must range over both singularities and pluralities. Therefore, kinds must be number-neutral, i.e. ∩ only applies to number-neutral properties. Now, because the number-neutral form is bare in Turkish (see next section), kind-formation processes can only apply to bare nouns. Thus, since Turkish bare plurals strictly take pluralities as their domain, they can potentially refer to subkinds, i.e. the atoms in the domain of the kind denotation, but not to kinds. Recall from Chapter 2 examples (42), (43), and (46) however, that in English, morphologically plural forms have been demonstrated to be ambiguous between plural and number-neutral denotations (Krifka, 1989; Sauerland, 2003; Sauerland, Anderssen, & Yatsushiro, 2005; Spector, 2007; Bale, Gagnon, & Khanjian, 2011b). I assume that in English, too, ∩ applies to number-neutral denotation of the bare plural. This makes an interesting prediction: Kind emulations will only be possible in languages where number-neutrality is encoded in in the plural form. Only further research will tell if this prediction is borne out.

3.4.1 Domain of count bare nouns

Based on the discussion in the preceding section, I propose here that Turkish count bare nouns pick out the domains in Table 11.

Table 11. Domain of Count Nouns in Turkish

Type	Domain	Example
	Bare nouns (*NP*)	
Kind		*Meyve* vitamin depo-su-dur. fruit vitamin store-COMP-COP 'Fruits are stores of vitamins.'
Object		Can *meyve* ye-me-di. Can fruit eat-NEG-PST 'Can did not eat fruits.'
	Bare singulars (*NP-Ø* / *bir NP*)[21]	
Kind		Can *bi meyve-yi* sev-m-iyor, Can a fruit-ACC like-NEG-IMPF yani elma-yı. namely apple-ACC 'Can does not like one fruit, namely apples.'
Object		Can {*meyve-Ø-yi* / *bi meyve*} ye-di. Can fruit-SG-ACC a fruit eat-PST 'Can ate {the fruit / a fruit}.'
	Bare plurals (*NP-lAr*)	
Kind		Can *meyve-ler-i* sev-m-iyor. Can fruit-PL-ACC like-NEG-IMPF 'Can does not like (any kind of) fruits.'
Object		Can *meyve-ler-i* geri gönder-di. Can fruit-PL-ACC back send-PST 'Can sent the fruits back.'

Several notes are in order. First, number markers are treated as restrictive (subsective) modifiers in Turkish, in the spirit of Partee's (2010) position that all modification is restrictive. Singular and plural markers restrict the denotation of the number-neutral bare form to singularities and pluralities respectively. Morphologically speaking, singular and number-neutral forms are identical in Turkish, but, crucially, their domain is rather different. I assume that a phonologically null singular marker (-Ø) is present in cases where singularity is intended. Structurally, the singular is more complex than the number-neutral: The former contains number specification while the latter does not. Turkish *-lAr* is a true plural marker; and therefore *-lAr*-marked NPs are ruled out from downward entailing contexts (25a-c) as well as habitual statements (25d), all requiring number-neutrality.

(25) Downward entailing contexts

a. Questions
{Çocuğ-un / **Çocuk-lar*-ın} var mı?
Child-2SG.POSS child-PL-2SG.POSS exist QUES
'Do you have *children*?'

b. Conditionals
{Çocuğ-un / **Çocuk-lar*-ın} var-sa söyle.
Child-2SG.POSS child-PL-2SG.POSS exist-COND tell
'If you have *children*, tell me.'

c. Negation
{Çocuğ-um / **Çocuk-lar*-ım} yok.
Child-1SG.POSS child-PL-1SG.POSS exist.NEG
'I do not have *children*.'

d. Habitual statements
Boş zaman-ım-da {kitap / **kitap-lar*} oku-r-um.
Free time-1SG.POSS book book-PL read-AOR-1SG
'I read *books* in my free time.'

[21] I assume, with Öztürk (2005) and Görgülü (2012), among others, that the prenominal *bir* 'one' in Turkish is a marker of singularity.

Further, to the extent that they are acceptable, bare plurals lead to deviant and highly lexicalized interpretations. Thus, in (26), *giysiler* 'clothes' directly refers to plurality of types of clothes, and only indirectly to the plurality of instances of clothes.

(26) Bugün *giysi-ler* al-dı-m…
Today clothe-PL buy-PST-1SG
'I bought clothes today…'

i. türlü türlü 'of varying types' (plurality of kinds)
ii. *üç tane 'three' (plurality of objects)

As can be seen from the English translation of the sentences in (25), however, English requires bare plurals in almost all cases where number-neutrality is intended, further strengthening the argument that English bare plurals are number-neutral.[22]

3.4.2 Domain of mass bare nouns

Recall from Section 2.2 that, despite claims to the contrary, Turkish does have lexical count/mass contrast. The relevant piece of evidence was that quantifiers like *sayısız* 'numerous' and *birkaç* 'a few' are only possible with count nouns (27a), that denominal verbs built on count nouns yield telic predicates while those built on mass nouns yield atelic ones (27b-b'), and that classifiers are only possible with count nouns (27c).

(27) Lexical count/mass contrast in Turkish

a. {sayısız / birkaç} {kitap / ev / *su / *benzin}
numerous a.few book house water gasoline
'{numerous / a few} {books / houses / *waters / *gasolines}'

[22] See Farkas and de Swart (2010) for counterarguments.

b. Kısrak bir dakika {içinde / *boyunca} *yavru*-la-dı. (*yavru* is count)
mare one minute in by foal-DRV-PST
'The mare foaled in {a/*for} minute.'

b'. Bebek on dakika {*içinde / boyunca} *ter*-le-di. (*ter* is mass)
baby ten minutes in for sweat-DRV-PST
'The baby sweated {*in / for} ten minutes.'

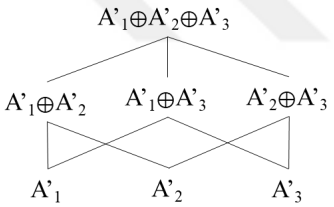
c. iki *tane* {elma / *hava}
two CL apple air
'two {apples/*airs}'

I assume that mass BNPs are also ambiguous w.r.t. the domain they pick, and can denote both kind and object entities. Unlike the case with count nouns, however, the domain of object-denoting mass nouns is not structured, while that of subkind-denoting ones is.

(28) Domain of mass bare nouns

a. Object

b. Kind



a

This predicts that, when they pick out the object domain, mass nouns in Turkish will resist plural morphology and always refer cumulatively. This is because the domain of mass BNPs is unstructured. When they pick the kind domain, however, they will accept plural marking, in which case they will refer solely to pluralities of subkinds. (29) confirms both predictions.

(29) a. Object

*Bazı *benzin-ler* burada.
Some gasoline-PL here
Int.: 'Some gasolines are here.'

b. Kind

Bazı *benzin-ler* yakıt ekonomi-si sağlı-yor,
Some gasoline-PL fuel economy-COMP provide-IMPF

örn. Shell V-Power, Esso Supreme.
e.g. Shell V-Power Esso Supreme

'Some gasolines provide fuel economy, e.g. Shell V-Power, Esso Supreme.'

As with count nouns, true kind reference of mass bare nouns can only be achieved with the singular form. Kind emulation is still blocked because it is derived from plural individuals that denote in the object subdomain, and mass nouns, referring to undifferentiated stuff, have no plural forms in the first place.

(30) Su(*-lar) yaşam-ın önkoşul-u-dur.
water-PL life-GEN prerequisite-POSS-COP
'{The water is / *Waters are} a prerequisite for life.'

Let us summarize the domain of count and mass nouns in Table 12.

Table 12. Extensions of Number-Neutral, Singular, and Plural Nouns

		Count Nouns	Mass Nouns
Object	Number-Neutral	√	√
	Singular	√	*
	Plural	√	*
Kind	Number-Neutral	√	√
	Singular	√	√
	Plural	√	√

Note incidentally that the ambiguity analysis does not need operations like Universal Sorter (Bunt, 1985), originally formulated to explain examples like (31).

(31) three wines (i.e. three *kinds* of wine)

The idea is that Universal Sorter takes an object denoting uncountable mass noun and returns a kind denoting countable one. Under the model advanced here, the effect of Universal Sorter is captured without further assumptions. Here is how. Recall that mass nouns, like count ones, are ambiguous as to whether they denote a kind or an object entity, and that the role of classifiers and kind terms is to restrict the domain to object and kind entities respectively. This correctly predicts that, given sufficient context, a counted mass nouns can either denote a subkind (taking the kind domain) or a measure (taking the object domain).

(32) three wines

a. three *measures* (i.e. bottles) of wine (object)

b. three *subkinds* of wine (i.e. red vs white) (kind)

We can thus capture the effect of Universal Sorter (Bunt, 1985) and Universal Packager (Jackendoff, 1991) by assuming the presence of a measure phrase (see Section 4.4.1) above the noun, the head of which is left null and supplied by listeners contextually.

To recap, we have seen that, in the absence of contextual factors, Turkish bare nouns are globally ambiguous as to what entity they denote: subkind or object. This applies to count as well as mass nouns. Both singular and plural markers modify the number-neutral noun restrictively, narrowing its domain to atomic and sum individuals respectively. Since Turkish bare nouns denote the subkind and object, plural forms can denote pluralities of subkinds and objects, but notably not kinds, which can only be derived through Link's (1983) group forming operator ↑.

Obligatorily plural kind emulations are disallowed because they are built on the properties of object individuals, and Turkish plural excludes atomic entities from the domain, making it incompatible with kind reference.

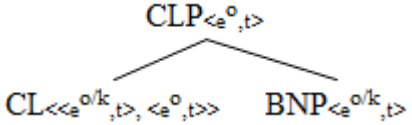
3.5 Classifier – kind contrast

In this section, I address the function of classifiers and propose, in keeping with the model presented so far, that they serve the purpose of restricting the domain of bare nouns to object individuals. Kind term like *tür* 'kind' do the opposite: They restrict the domain to (sub)kind individuals. I will demonstrate in particular that this line of reasoning readily accounts for the behavior of a group of nouns that resist classifiers and/or kind terms.

3.5.1 Function of classifiers

Recall that Turkish bare nouns are ambiguous: They have the potential to denote a kind as well as an object. I propose that one crucial function of classifiers is to restrictively modify the bare noun to object entities only. Significantly, though, the classifier does not change the denotation of the bare noun from kind to object; it simply acts as a restrictive modifier. Thus, a classifier takes an ambiguous $<e^{o/k},t>$ bare noun and returns an unambiguous $<e^{o},t>$ noun. For the time being, I label the projection hosting the classifier CLP but I will revise it in Chapter 4.

(33) Function of classifiers (preliminary)



This proposal stands in sharp contrast to the so-called classifier-for-counting hypothesis argued for in Chierchia (1998a), and Borer (2005), among others, which basically maintains that classifiers are required to carve out a level of counting from an otherwise exclusively kind-denoting and thus mass noun. In the present model, classifiers do not partition a mass noun into countable units (recall from Section 2.2.1 and 3.4.2 that classifier languages do have count/mass contrast); rather, they simply combine with an already countable bare noun, concomitantly restricting its domain. What they do is rather negative: They block reference to the kind domain.

It also explains in what sense Cheng and Sybesma (1999) are on the right track in arguing that while measure expressions (their massifiers) 'create' a unit, classifiers 'name' an already available unit (Cheng & Sybesma, 1999, p. 515). I agree that the bare nouns of classifier languages have already lexicalized the information as to what counts as a counting unit, obviating the need for classifiers to do so, but disagree as to the primary function of classifiers: They restrict the domain rather than name the unit.

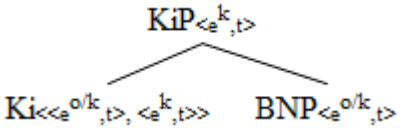
This reasoning also goes against Rullmann and You (2006), who argue that classifiers arise because bare nouns of classifier languages are number-neutral. The presence of classifiers is not related to number-neutrality at all, as number-neutral bare nominals exist in classifier as well as non-classifier languages.

This model also fares well with the observation that classifiers categorize, or at least select, nouns based on properties like shape, size, texture, and function, which are properties associated with object but not kind individuals. Given that classifiers target the object domain, it comes as natural that they incorporate such functions into their lexical specification.

3.5.2 Function of kind terms

Given the ambiguity analysis developed so far, it must have been clear what function kind terms perform: They do the opposite of classifiers. While classifiers restrict the domain to object entities, kind terms like *tür* 'kind', *çeşit*[23] 'type' restrict it to kind entities, functioning again as restrictive modifiers. Thus, *tür* 'kind' takes an ambiguous $<e^{o/k},t>$-type bare noun and returns an unambiguous $<e^{k},t>$one.

(34) Function of kind terms (preliminary)



This correctly predicts classifiers and kind words to be mutually exclusive. To the best of my knowledge, such restrictions apply crosslinguistically.

(35) *iki {*tane tür* / *tür tane*} köpek
two CL kind kind CL dog
Int: 'two {instances kinds / kinds instances} of dogs'

Further, the model presented here does not predict classifiers (and kind words for that matter) to be either obligatory or optional. It just predicts ambiguity in the absence of such elements, which has already been demonstrated to be the case.

---

[23] Not all kind terms pattern the same though. In general, *tür* 'kind' and *cins* 'breed' are used to refer to well established, taxonomically available kinds (i.a), while *çeşit* 'type' is used to categorize entities based on non-taxonomically relevant properties (i.b).

(i) a. köpek türleri/cinsleri: Dalmaçyalı / Golden / *tüylü / *büyük kulak-lı
dog kinds breeds Dalmatian Golden furry big ear-DRV
'kinds/breeds of dogs: Dalmatian/Golden/*furry/*with big ears'
b. köpek çeşitleri: *Dalmaçyalı / *Golden / tüylü / büyük kulak-lı
dog types Dalmatian Golden furry big ear-DRV
'types of dogs: *Dalmatian/*Golden/furry/with big ears'

Crucially, *çeşit* 'type' refers not to an object-level entity but an abstract kind-level one representing the category. I leave open the issue of how to formulate the contrast between taxonomic kinds versus categoric generalizations and how they interact with different kind words.

Different languages might take different paths as to whether this sort of disambiguation should be supplied morpho-syntactically. Thus, we have obligatory classifier languages which make the disambiguation overt, optional classifier languages which allow but do not require it, and non-classifiers ones which (mostly) lack lexical resources to do so. Exactly such an analysis of English comes from Kratzer (2008), who proposes, based on the ambiguity of *zebra/zebras* in (36), that English count nouns are underspecified as to whether they denote kinds or objects.

(36) a. This *zebra* has not been fed. (object)
a'. Those *zebras* have not been fed.

b. This *zebra* is almost extinct. (kind)
b'. Those *zebras* are almost extinct.

(Kratzer, 2008, p. 272)

She further demonstrates, as I have already argued in Section 3.4.2, that this sort of ambiguity extends to mass nouns.

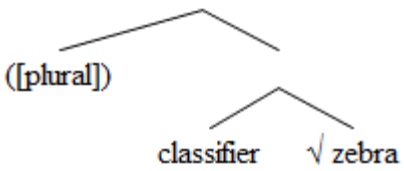
(37) a. This wine is for Table 8. (object)
a'. You dropped two red wines.

b. This wine (i.e. Pinot Noir) is rare. (kind)
b'. We tasted five different wines (i.e. Pinot Noirs).

(Kratzer, 2008, p. 272)

Kratzer (2008) therefore concludes that a classifier must project above the noun as in (38), noting that the kind/object ambiguity arises when this classifier is covert.

(38) English classifier projection



Note in the passing that this sort of under-specification is not peculiar to classifier constructions per se but applies to the expression of other grammatical categories crosslinguistically. Take the case of aspectual marking. While English overtly marks the distinction between general imperfective and progressive, Turkish conflates the two, leading to under-specification, in which case listeners rely on contextual cues to disambiguate. Same goes for clusivity: Some languages overtly mark the distinction between inclusive uses of the first-person plural pronoun *we*, in which case its extension includes the addressee, and the exclusive uses of it, in which case its extension excludes the addressee. Other languages simply leave such distinctions morphologically unmarked.

3.5.3 Non-canonical bare nouns

This section provides further evidence in support of two claims made in this chapter: (i) That bare nouns are (largely) ambiguous between kind and object denotations, and (ii) That classifiers and kind terms restrict the domain to object and kind entities, respectively. In the spotlight are nouns that denote more or less than kind and/or object entities.

For a starter, consider the following expressions.

(39) a. üç (**tane*) {gün / ay / yıl}
three CL day month year
'three days / months / years'

b. üç (**tane*) {şey / kişi}
three CL thing person
'three things / persons'

In Turkish, words of duration like *gün / ay / yıl* 'day / month / year'[24] as well as some other words like *şey / kişi* 'thing / person' reject co-occurrence with a classifier, as also noted in Schroeder (2007, p. 476). Such a phenomenon has also been observed in other typologically unrelated obligatory and optional classifier languages. Tang (2005, p. 455) reports, for instance, that (some) words of duration in Mandarin like *tian* 'day' and *nian* 'year' resist classifiers. Thus, even in obligatory classifier languages, lexical items exist which totally reject co-occurrence with a classifier. Importantly though, this includes the so-called *general classifier*, which is assumed to be the default one that can combine with any bare noun. The question then is how to account for such restrictions.

Considering the (relatively easier) case of words of duration, Zhang (2011a) assumes, with Li and Thompson (1981) and Cinque (2011), that words like *day* and *year* occupy the classifier position and combine with the null noun *shijian* 'time' in Chinese[25]. Similarly, Tang (2005) proposes that these words are lexically specified as [-N, +CL], which amounts to saying that they are classifiers occupying a functional slot. In Turkish, too, words of duration can only co-occur with the word *süre* 'duration', suggesting that Zhang (2011a) and Tang (2005) are on the right track.

(40) Can üç {gün / hafta} {*süre*-yle / **zaman*-la} izn-e ayrıl-dı.
Can three day week duration-INST time-INST vacation-DAT leave-PST
'Can went on vacation for three {days / weeks} {duration/*time}.'

Thus, (39a) ceases to be a problem if we assume that words of duration are classifiers themselves that already occur with a covert duration-denoting noun, leaving no room for another classifier.

[24] Rijkhoff (2002) categorizes nouns into three groups: spatially existing first order nouns like *cat*, temporally existing second order nouns like *game*, and abstract third order nouns like *belief*. In this model, words like *gün* 'day' denote second order entities.
[25] For counterarguments, see Simpson and Ngo (2018).

The difficult problem comes from cases like (39b) in which a noun strictly rejects co-occurrence with a classifier. Quite recently, Simpson and Ngo (2018) propose an account of such nominals in the obligatory classifier language of Vietnamese. This language apparently has three groups of bare nouns: one obligatorily requiring classifiers (41a), one optionally allowing them (41b), and one rejecting them (41c).

(41) a. hai *(*con*) chó
two CL dog
'two dogs'

b. bôn (*căn*) phòng
four CL room
'four rooms'

c. hai (**con*) màu (Vietnamese)
two CL color
'two colors'

(Simpson & Ngo, 2018, pp. 213-214)

Simpson and Ngo (2018) call these obligatory-classifier nouns, optional-classifier nouns, and non-classified nouns respectively. Briefly, they propose that a classifier layer always projects in Vietnamese, but that the language has a covert classifier ($CL_{-Ø}$) alongside the overt ones. Bare nouns of Vietnamese are lexically specified as to whether they are compatible with $CL_{-Ø}$: Obligatory-classifier nouns reject it while non-classified nouns require it. Optional-classifier nouns, on the other hand, are taken to be compatible with overt classifiers as well as the affixal covert $CL_{-Ø}$. When a bare noun occurs under the affixal $CL_{-Ø}$, it obligatorily raises to the classifier position for phonological reasons. Thus, Simpson and Ngo (2018) relate the contrast to the lexical specification of bare nouns.

Although I do not have a grasp of the Vietnamese data, and fully accept that the issue is highly complicated, I reject Simpson and Ngo's (2018) analysis on at least two principled grounds. First, by linking the contrast to lexical specification, they actually name the problem rather than account for it. Why should a group of nouns be lexically specified as rejecting classifiers (in their terminology, obligatorily combining with $CL_{-Ø}$), while others as requiring them? I believe lexical specification

should not be brought into picture unless all other means are exhausted, since such an argument has virtually no explanatory power. Second, the group of nominals that crosslinguistically reject classifiers tend to be words of duration like *day* and *month*, unit specification like *dollar*, words like *thing* and *person*, and, as I shall demonstrate, words that specifically denote events. Taking the issue to be lexical, Simpson and Ngo's (2018) model misses an apparent crosslinguistic generalization.

In what follows, I propose an account that naturally follows from the model presented here without additional stipulations. The upshot of the proposal is that bare nouns that lack kind and/or object in their denotation resist modification by kind words as well as classifiers crosslinguistically. This is because their presence will eventually lead to either a semantic conflict or to redundancy.

The reasoning goes as follows. I start with the standard assumption that the word *kişi* 'person' is categorically a noun like *insan* 'human', since taking it to be a classifier will lead to further complications. However, unlike *insan*, which ambiguously denotes both kind and object, *kişi* lacks kind individuals in its domain, leading to the following contrast.

(42) a. iki tür *insan* a'. iki tane *insan* a''. *insan* tür-ler-i
two kind human two CL human human kind-PL-COMP
'two kinds of humans' 'two humans' 'kinds of humans'

b. *iki tür *kişi* b'. ??iki tane *kişi* b''. **kişi* tür-ler-i
two kind person two CL person person kind-PL-COMP
'two kinds of persons' 'two persons' 'kinds of persons'

Given that *insan* 'human' lexicalizes both the kind and the object individuals, it readily accepts modification by *tür* (42a) and *tane* (42a'), as well as participating in compounds headed by *tür* 'kind' (42a''). *kişi*, however, lacks the kind domain in its lexical specification; it only denotes in the object domain. Roughly, it means

HUMAN.OBJECT (whereas *insan* simply means HUMAN, underspecified with respect to kind/object contrast). Thus, (42b) leads to a conflict as we are trying to restrict the denotation of *kişi* 'person' to kind entities, which simply do not exist in its domain. The ungrammaticality of (42b'') further strengthens the argument that *kişi* lacks kind denotation. (42b'), on the other hand, attempts to restrict the denotation of *kişi* to object individuals only; but ungrammaticality obtains presumably due to redundancy: *kişi* already refers to object individuals exclusively, and thus the object-selecting classifier cannot restrict the noun in any meaningful way. Thus, kind terms and classifiers are banned from co-occurring with such nouns for different reasons: kind terms due to semantic conflict (i.e. their combination leads to empty sets), and classifiers for redundancy (they cannot restrict). Yet, the marked status of (42b') as opposed to the plain ungrammaticality of (42b) and (42b'') suggests that the ban against redundancy is lesser of a constraint than the one against semantic conflict. Indeed, with words like *şey* 'thing', which also exclusively refer to object individuals, the use of a classifier is much freer than the use of kind-targeting modifiers.

(43) iki (*tür / ?tane) *şey*
two kind CL thing
'two {?items / *kinds} of things'

Thus, the earlier proposal that bare nouns are inherently two-way ambiguous is at best an idealization. We do have nouns that lack either of the kind or object domain in its specification, and we have seen that such words resist restriction by kind- or object-targeting modifiers like *tür* 'kind' and *tane* 'CL' respectively.

Another group of bare nouns that lack either the kind or the object denotation are words that specifically lexicalize events. Take the word *devir* 'revolution'. Since

it exclusively refers to an event whereby an object rotates around its axis once, it is predicted to resist kind-targeting *tür* and object-targeting *tane*, but not classifiers that specifically target the event component in its lexical meaning. (44) establishes that this prediction is borne out.

(44) Makine dakika-da 4000 {*tane / tur} *devir* yap-ıyor.
machine minute-LOC 4000 CL round revolution do-IMPF
'The machine does 4000 {*CL / rounds} of revolutions per minute.'

cf. **devir* tür-ler-i
revolution kind-PL-COMP
Int.: 'kinds of revolutions'

Oyun 'game', on the other hand, is three-way ambiguous: kind, object, an event. Thus, modification by kind, object, and event classifiers leads to grammatical forms with different interpretations.

(45) a. İki tür *oyun* oyna-dı-k: şans oyunu ve zeka oyunu. (kind)
two kind game play-PST-1PL chance game and mind game
'We played two kinds of games: lottery and mind games'

b. iki el *oyun* oyna-dı-k. (event)
two hand game play-PST-1PL
'We played two hands of games.'

c. iki tane *oyun* oyna-dı-k: iskambil ve scrabble. (object)
two CL game play-PST-1PL cards and scrabble
'We played two games: cards and scrabble.'

(45a) denotes two kinds of games, with no specification as to how many specific games or how many hands were played; (45b) simply states that two events of playing took place, with no specification of how many kinds/instances of games were involved in these events; and (45c) counts specific games played, with no reference to the number of playing events, though we indirectly infer that a minimum of two types of games were involved.

In contrast to Simpson and Ngo's (2018) ad hoc lexicalization argument, the analysis proposed here for the so-called non-classified nouns explains the problem with virtually no added stipulations. Further, unlike Simpson and Ngo (2018), the present model has predictive power: It predicts that nouns denoting concepts that exclusively refer to object individuals will crosslinguistically reject co-occurrence with kind terms and classifiers (with the proviso that the use of a classifier might be marginally acceptable if redundancy is a violable constraint). Aikhenvald (2003, p. 102) has already noted, unsurprisingly, that Hungarian *ember* 'person' cannot co-occur with any classifier. The analysis also predicts the existence of nouns that solely refer to kind entities, which will also be incompatible with classifiers for reasons of semantic conflict, and at best marginally compatible with kind terms for reasons of redundancy. The Turkish word *insanoğlu* 'mankind' is a kind-only noun; but since such nouns are highly abstract and almost exclusively uncountable, it is hard to test them with classifiers, which only combine with countable nouns. Only further research will demonstrate if, and to what extent, this analysis accounts for such patterns crosslinguistically.

Note as a final remark that the presence of object-only nouns like *kişi* 'person' strongly challenge Krifka (1995), who claims that "kinds seem to be ontologically prior to specimens; if we want to call some real object a bear, we have to relate this object to the kind *Ursus*, whereas it is not necessary to have some real specimens in mind in order to talk about the kind *Ursus*" (p. 399). Whether this might ontologically be the case, we have seen that languages do have lexical items (Turkish *kişi* and Hungarian *ember*, both meaning 'person') that exclusively denote in the object domain.

3.6 Summary

This chapter discussed the denotation of Turkish bare nouns. After a short review of literature on bare noun semantics was introduced in Section 3.2, it was demonstrated in Section 3.3 that Turkish bare nouns are ambiguous as to whether they take object individuals or kind individuals as their domain. It was shown in particular that the presence of classifiers and kind terms lift the ambiguity, singling out object and kind domains respectively. We have further seen that Turkish bare plurals in their kind denotation can refer to pluralities of subkinds but not kinds. This is because, in contrast to English, morphological plural in Turkish aligns with semantically plurality, whereas kind reference requires a number-neutral form.

Section 3.4 laid down the domains of count and mass bare nouns in their number-neutral, singular, and plural forms. The argument was that singular and plural markers act as restrictive modifiers in Turkish, restricting the domain of a bare noun to singularities and pluralities respectively. It was demonstrated that count nouns can take object and kind domains in either form, while mass nouns cannot refer to singularities or pluralities of object individuals since the domain of a mass noun is in its object denotation is unstructured. Reference to pluralities of subkind individuals is still possible with plural mass nouns though, under a *type-of* reading.

The function of classifiers and kind terms was discussed in Section 3.5 where it was demonstrated that a classifier takes an object- or kind-referring ambiguous noun as input and returns an object-referring noun as output, while a kind word does the opposite: It restricts object- or kind-referring nouns into kind-referring ones. This line of reasoning was shown to easily account for the properties of a set of nouns that resist classifiers and/or kind word like *kişi* 'person' or *devir* 'revolution'. This restriction was linked to the fact that these nouns lack reference to object and/or kind

entities, and that restriction by classifiers or kind words either returns an empty set or results in redundancy. This was further supported by the behavior of three-way ambiguous words like *oyun* ‘game’, which further lexicalize events alongside objects and kinds.

CHAPTER 4

CONSTITUENCY OF CLASSIFIER CONSTRUCTIONS

4.1 Introduction

This chapter addresses the syntax and concomitant semantics of classifier constructions. Three issues are discussed in particular: (i) the dual nature of some classifiers and measure words, (ii) the syntax and semantics of classifier and measure constructions, (iii) and the status of Multiple Classifier Constructions (MCLCs).

Section 4.2 highlights the dual nature of some classifiers and measure words which come in two guises: As a lexical element that can participate in derivational contexts, and as a functional one which measures or counts. It is demonstrated that in their lexical disguise, those classifiers and measure expressions are regular words of type <e,t>, while they are functional elements of type <n, <e,t>> in their functional use. These two uses of dual classifiers and measure words are shown to have contrasting distributional and interpretive possibilities.

Section 4.3 lays down and justifies some background assumption regarding the upcoming discussion in Section 4.4 where I address the syntax of classifier constructions. I demonstrate in particular that classifiers and measure words target the head position of a dedicated functional layer, the μP, and spell out varying features of it. All elements that target μP are transitive objects of type <n, <e,t>>, hence always requiring the presence of a numeral. Overall, the μP denotes a property of type <e,t>, which is then applied to the bare noun either predicatively or attributively. In this section, I also address the problem of counting/measuring ambiguity associated with classifier constructions involving container words (cf. Section 2.3.3) and propose an analysis that fits well with the current model. I close

off the section by rejecting Zhang's (2011a) argument that the presence of some classifiers is not semantically but syntactically motivated, and that they serve no function at all.

Section 4.5 turns to the problem of multiple classifier constructions which basically come in two forms: Partitive MCLCs, and Attributive MCLCs. It is demonstrated in particular that the distribution and interpretation of multiple classifier constructions follows quite naturally from the model presented, once we bring two independently established constraints into the picture: monotonicity, and distributivity.

Section 4.6 addresses the problematic [CL + NP] constructions in which, surprisingly, a classifier occurs with a bare noun in the absence of a numeral. I argue, however, that these are instances of bare N-N compounds, and that the classifier is actually an <e,t>-type predicate occupying the non-head position of the compound.

I close this chapter in Section 4.7 with an incursion into the territory of kind words which pose a strong object-or-kind puzzle. The mystery is that, in some constructions involving kind words, evidence points to conflicting conclusions: Some part of the evidence strongly suggests that the domain includes object individuals only, while the other part strongly suggests that it includes kind individuals only. I argue that in these cases, the process is not the canonical restriction of the domain, but one of instantiation of the kind by a specimen.

4.2 Dual nature of classifiers and measure terms

This section differentiates between lexical and functional classifiers and measure terms, assigns them to appropriate types, and discusses their distribution.

4.2.1 Types of classifiers and measure terms

Observe first that, based on their function, classifiers and measure words can be grouped into the categories in Table 13.

Table 13. Types of Classifiers and Measure Words

Type	CL/M	Example/Gloss	Translation
standard Ms	*kilo, litre* kilo, liter	*iki kilo un* two kilo flour	two kilos of flour
container Ms	*bardak, salon* glass, hall	*iki bardak su* two glass water	two glasses of water
partitive Ms	*damla, dilim* drop, slice	*iki dilim pasta* two slice cake	two slices of cake
paranumerals	*çift, düzine* pair, dozen	*iki çift çorap* two pair sock	two pairs of socks
group CLs	*sürü, demet* flock, bunch	*iki demet çiçek* two buch flower	two bunches of flowers
atomic CLs	*yaprak, dal* sheet, fag	*iki yaprak kağıt* two sheet paper	two sheets of paper
general CLs	*tane* CL	*iki tane kalem* two CL pen	two pens

The reason for classifying such terms as classifiers or measure words is that they more or less perform the same function of either counting or measuring the noun in varying ways. In what follows, I restrict attention to standard measures, container measures, group classifiers, atomic classifiers, and the general classifiers, ignoring partitive measures and paranumerals for expository purposes. Nevertheless, the analysis proposed is intended to cover all types of classifier and measure constructions.

4.2.2 Lexical – functional contrast

While the examples in Table 13 establish that all classifiers and measure words can fill functional positions, those in Table 14 demonstrate that only some have lexical uses. Thus, standard measures and general classifiers cannot participate in the derivational process of compounding.

Table 14. Lexical/Functional Distinction in CLs/Ms

Type	CL/M	Compounding	Translation
standard Ms	*kilo* kilo	**un kilo-su*[26] flour kilo-COMP	Int: flour kilo(s)[27]
container Ms	*bardak* glass	*su bardağ-ı* water glass-COMP	water glasss(es)
group CLs	*demet* bunch	*çiçek demet-i* flower bunch-COMP	flower bunch(es)
atomic CLs	*yaprak* sheet	*kağıt yaprağ-ı* paper sheet-COMP	paper sheet(s)
	tane grain	*kum tane-si* sand grain-COMP	sand grain(s)
general CLs	*tane* CL	**kalem tane-si* pen CL-COMP	Int: pen(s)

[26] Öztürk and Erguvanlı-Taylan (2016) propose that in such constructions (their possessive compounds whose non-head lack genitive-marking), the non-head noun restricts the denotation of the head noun to an appropriate subkind. Therefore, the head noun must allow for a subkind interpretation, or else ungrammaticality obtains.

(i) a. *elma kilo-su
apple kilo-POSS
'apple kilo'

b. *kumaş metre-si
fabric meter-POSS
'fabric meter'

(Öztürk & Erguvanlı-Taylan, 2016, p. 98)

In these examples, the measure expressions *kilo* and *meter* lack a subkind in most people's taxonomy. Thus, restriction by the non-heads *elma* 'apple' and *kumaş* 'fabric' fails, hence the ungrammaticality.

[27] Constructions like (i) pose no challenge to the argumentation.

(i) a. Un*(-un) *kilo*-su 5 lira.
flour-GEN kilo-POSS 5 lira
'A kilo of flour is 5 liras.'

b. Un*(-un) *bir kilo*-su 5 lira.
flour-GEN one kilo-POSS 5 lira
'A kilo of flour is 5 liras.'

Put briefly, standard measures and the general classifier *tane*[28] are purely functional items, while container measures, group classifiers, and atomic classifiers double as regular words. Despite their synchronic status as classifiers/measures, most of these functional uses have been demonstrated to have diachronically derived from corresponding lexical bases. Particularly interesting is *tane*, which has a limited distribution as a lexical element. I discuss that in the next section.

4.2.3 Denotation of lexical classifiers/measure words

Since lexical classifiers and measure words typically occur in compounds, I would like to take a little excursion into the structure of compounding. There is a considerable body of literature behind compounding in Turkish, particularly the status of the compound marker *–(s)I(n)*, since the same marker is used in genitive-possessive constructions (1a) as well as compounds (1b).

(1) a. çocuğ-un oda-sı (genitive-possessive construction)
child-GEN room-POSS
'the child's room'

b. çocuk oda-sı (compound)
child room-COMP
'child room'

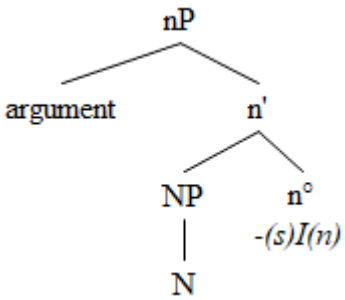
Two major lines of analyses have emerged regarding the status of *–(s)I(n)* in these two constructions: Unified analyses which argue that *–(s)I(n)* is a possessive

First, that these are not compounds is evidenced by the obligatory presence of the genitive marker. Second, (i.a) has identical semantics with (i.b), suggesting the presence of a covert *bir* 'one'. For omission of the numeral one in counting contexts, see Cheng and Sybesma (2005), Her, Chen, and Tsai (2015), and Her (2017).

[28] Zhang (2011a, p. 146) observes that Chinese general classifier *ge* cannot occur in such compounds, but takes it to be an accidental gap. I will demonstrate shortly that general classifiers are always <n, <e,t>>-type functional items. Since lexical processes require <e,t>-type predicates, the exclusion of *ge* from compounding follows due to type mismatch.

agreement marker in both genitive-possessive constructions in and compounds (Lewis G. L., 1967; Yükseker, 1998); and split analyses which maintain that *–(s)I(n)* is a possessive agreement marker in genitive-possessive constructions but a compound marker in compounds (van Schaaik, 1992; Göksel, 2009; Kunduracı, 2013). Quite recently, another unified analysis has been proposed in Öztürk and Erguvanlı-Taylan (2016) according to which *–(s)I(n)* has the same function in both genitive-possessive constructions as well as compounds. Contra the agreement analysis, however, they propose that *–(s)I(n)* is "a valency marker which signals the introduction of an argument" (Öztürk & Erguvanlı-Taylan, 2016, p. 96). Based on the observation that arguments of nominals must be introduced by some functional head (unlike verbs which can take their arguments directly) Öztürk and Erguvanlı-Taylan (2016) argue that *–(s)I(n)* heads the n° position in (2), thus allowing the NP to take an argument.

(2) Structure of *–(s)I(n)*



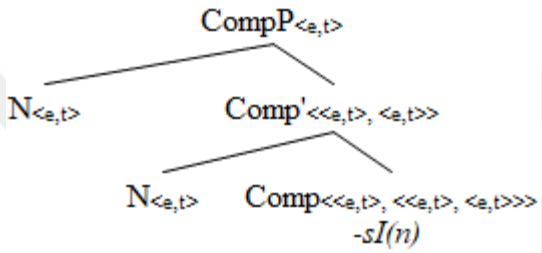
Thus, in this model, *-(s)I(n)* is the morphological reflex of a valency changing operation on a par with the little v in the clausal domain.

Gürer (2017) extends Öztürk and Erguvanlı-Taylan's (2016) analysis of Turkish *–(s)I(n)* to its counterpart in Karachay-Balkar (a Turkic dialect spoken Karachay-Cherkessia and Kabard-Balkar Republics of Russia), demonstrating that the two languages pattern very much alike, the only difference being that Turkish

does but Karachay-Balkar does not have type-shifting mechanisms to "transitivize" otherwise intransitive nouns and subsequently use them with *–(s)I(n)*.

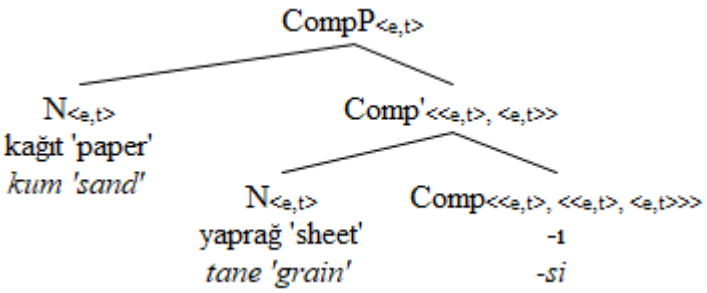
Back to lexical classifiers and measure words, I propose, pending the discussion and abstracting away from technical details, that compounding has the structure in (3), but nothing about the argumentation strictly depends on that assumption. Any model would do as long as the head and non-head nouns as well as the resulting compound are all of type <e,t>.

(3) Structure of compounding



I propose that container measures like *bardak* 'glass', group classifiers like *demet* 'bunch', and atomic classifiers like *tane* 'grain' are nouns denoting predicates of type <e,t>. Accordingly, the grammatical compounds in Table 14 built on those lexical classifiers/measure words are derived as follows.

(4) Compounding with lexical classifiers/measure words



This analysis correctly predicts that, occupying the head position of the compound, lexical uses of these elements will have different distribution and interpretive possibilities from their functional counterparts.

First, although functional elements require the presence of a numeral, lexical ones do not. Note that lexical classifiers/measure words can appear to the right of the noun while functional ones must appear to the left of it.

(5) a. **tane* kum / ??*yaprak* kağıt / ??*demet* çiçek (functional CLs/Ms)
CL sand sheet paper bunch flower

b. kum *tanesi* / kağıt *yaprağı* / çiçek *demeti* (lexical CLs/Ms)
sand grain paper sheet flower bunch

Second, verbs like *diz-* 'lay' that require plural complements are incompatible with uncountable nouns like *su* 'water', *kağıt* 'paper', and *kum* 'sand' even when they are pluralized (6a). When they appear as the non-head of a compound headed by a lexical classifier/measure word, however, we obtain a grammatical construction which denotes plurality of lexical classifiers/measure words (6b). This is because lexical classifiers/measure words denote countable units.

(6) a. Can {??*su-lar-ı* / ??*kum-lar-ı*} yanyana diz-di.[29]
Can water-PL-ACC / sand-PL-ACC side.by.side lay-PST
'Can laid {??waters / ??sands} side by side.'

b. Can {*su bardak-ları-nı* / *kum tane-leri-ni*} yanyana diz-di.
Can water glass-PL-ACC sand grain-PL-ACC side.by.side lay-PST.
'Can laid {water glasses / sand grains} side by side.'

[29] These constructions can be grammatical under an implied measure reading; but this is not what we are testing here. The point is that lexical classifiers/measure words do not measure or count, but rather denote either a perceivable unit, as in the case of *kum* 'sand' and *kağıt* 'paper', or a totally different object, as in the case of *bardak* 'glass', which actually denotes not water but glass.

Third, with verbs that require a plural complement, when a countable noun is substituted for the uncountable one, both constructions become grammatical but with different interpretations.

(7) a. Can *çiçek-ler-i* yanyana diz-di.
Can flower-PL-ACC side.by.side lay-PST
'Can laid the flowers side by side.' ⇒ (Flowers ended up side by side.)

b. Can *çiçek demet-ler-i-ni* yanyana diz-di.
Can flower bunch-PL-COMP-ACC side.by.side lay-PST
'Can laid flower bunches side by side.' ⇒ (Bunches ended up side by side.)

Fourth, constructions with lexical classifiers/measure words are compatible with the general classifier *tane* while functional ones are not.

(8) a. iki *tane* {su bardağı / kağıt yaprağı / çiçek demeti / kum tanesi}
two CL water glass / paper sheet / flower bunch / sand grain

b. *iki *tane* {bardak su / yaprak kağıt / demet çiçek / tane kum}
two CL glass water / sheet paper / bunch flower / grain sand

Thus, lexical classifiers/measure words contrast in distribution and interpretation from functional ones: While functional ones measure or count, lexical ones create another nominal headed by the classifier/measure word.

A question arises at this point as to what role these lexical classifiers/measure words play. In particular, what is the function of *tane* 'grain' in *kum tanesi* 'sand grain' (cf. Table 14)? An insightful analysis comes from Grimm (2012a; 2012b), who argues that, as far as the linguistic phenomenon of lexicalization is concerned, entities fall on a scale in terms of individuation.[30] This individuation, Grimm (2012a; 2012b) argues, lies at the heart of number marking patterns crosslinguistically. On

[30] Individuation is influenced by factors like animacy, distinguishability, interaction, and inherent plurality, among others.

the least individuated end of the scale are prototypically uncountable nouns denoting liquids/substances, and on the most individuated end are prototypically countable nouns denoting individual entities. Table 15 demonstrates that languages differ as to whether they mark all categories with independent morphemes, or whether they use syncretic forms that cover contiguous regions.

Table 15. Grimm's Lexicalization Patterns

Language	liquids / substances		granular aggregates		collective aggregates		individual entities	
	SG	PL	SG	PL	SG	PL	SG	PL
English	SG: *-Ø* / PL: NA				SG: *-Ø* / PL: *-s*			
Welsh	*-Ø*	NA	SG: *-yn* / PL: *-Ø*				*-Ø*	*-od*
Dagaare	*-Ø*	NA	*-ruu*	*-Ø*	*-ri*	*-Ø*	*-Ø*	*-ri*

As we can see, English collapses liquids/substances (like *water*) and granular aggregates (like *sand*) into one group, and collective aggregates (like *grape*) and individual entities (like *child*) into another group. The former group happens to have no PL form in English, while the latter uses *-s*. Thus, English uses syncretic forms to cover liquids/substances on the one hand and collective aggregates and individual entities on the other. Welsh, however, syncretizes number expression on granular aggregates and collective aggregates: *-yn* for SG and *-Ø* for PL. As with English, liquids and substances have no PL form, while the PL of individual entities is marked by *-od*. The most contrastive marking of each group is seen in Dagaare (a Niger-Congo language spoken in Ghana). In this language, granular aggregates are marked by *-ruu* in the SG and *-Ø* in the PL. Likewise, collective aggregates are marked by *-ri* in the SG and *-Ø* in the PL. This phenomenon is frequently referred to as inverse marking of number, since it is unusually the singular rather than the plural that gets marked. As for individual entities, singular is marked by *-Ø* and plural is marked by *-*

ri, the exact opposite of collective aggregates. Thus, these three languages follow different lexicalization patterns in expressing the singular and plural of the four groups of entities.

Back to Turkish, words like *kum* 'sand' lexicalize a granular aggregate, despite having perceivable/distinguishable atoms. I propose, in line with Grimm (2012a; 2012b), that *tane* in its lexical form spells out the perceivable atoms in granular aggregates (i.e. the 'grains' of sand), corresponding to Dagaare *-ru* and Welsh *-yn*. In a similar vein, the perceivable atoms of collective aggregates like *kağıt* 'paper' are spelled out by the lexical classifier *yaprak* 'sheet'. In a nutshell, the role of Dagaare *-ruu* and *-ri* are performed by *tane* 'grain' and *yaprak* 'sheet' in Turkish.

Thus, although liquids/substances and granular aggregates are lexicalized as uncountable nouns in Turkish, the language still has grammatical means to express the ontological distinction between them.

4.2.4 Denotation of functional classifiers/measure terms

When used in functional positions, classifiers/measure words can, but do not have to, retain their lexical meaning. Thus, *three glasses of water* or *three bunches of flowers* does not necessarily mean that the water/flowers come(s) in glasses or bunches. These expressions simply measure the noun. Similarly, *üç tane kitap* 'three CL book' does not signal that books come in *grains*. In Section 4.4, I elaborate on the denotation and compositional properties of functional classifiers/measure words, but before moving onto the analysis, I wish to spell out some assumptions I make regarding the properties of numerals, measure words, and classifiers, which will form the basis of my analysis.

4.3 Background assumptions

Numerals:

These are number-denoting elements of type *n*.[31] They correspond to natural numbers, but crucially, do not denote measure or cardinality. No numeral can thus directly combine with a bare noun due to type mismatch.

Measure terms:

Measure is a function from sets to numerals. A measure is a mathematical object that quantifies the size of a set. Measure functions like *kilo* relate individuals to some point on a scale, i.e. they map individuals onto scales. Measure words are relational type-<n, <e,t>> items, and all measure phrases denote <e,t>-type properties.

[31] There are four views of numerals proposed in the literature. Partee (1987) takes numerals to be <e,t>-type predicates; van der Does (1993) takes them to be <<e,t>, <<e,t>, t>>-type determiners; Ionin and Matushansky (2006) assign them the <<e,t>, <e,t>>-type of modifiers; while Scontras (2014) proposes that they are *n*-type entities denoting natural numbers. In line with Partee (1987), Balkız Öztürk (p.c.) proposes based on (i.a-c) that numerals of Turkish pattern with predicates.

(i) a. Soğuk insan-ı *hasta* ed-er. (adjective)
cold human-ACC sick do-PRS
'Cold makes one sick.'
b. Can her gün ban-a *telefon* ed-er. (noun)
Can every day I-DAT telephone do-PRS
'Can telephones me everyday.'
c. Dört kere üç *oniki* ed-er (numeral)
four times three twelve do-PRS
'Four times three makes twelve.'
d. *Dört tane kere üç tane oniki tane ed-er. (numeral-CL)
four CL times three CL twelve CL do-PRS
'Four times three makes twelve.'

Öztürk's point is that the numeral *oniki* 'twelve' patterns with *hasta* 'sick' and *telefon* 'phone' in immediately preceding the predicate *et-* 'do'. Given the principle of semantic compositionality, this distributional parallelism suggests that the numeral *oniki* might be associated with the same type as the adjective *hasta* and the noun *telefon*, which are clearly predicative. Ionin and Matushansky (2006) present several pieces of arguments against treating numerals as determiners of type <<e,t>, <<e,t>, t>> or predicates of type <e,t>. (i.d) demonstrates, on the other hand, that Numeral-CL sequences, which I take to denote properties of type <e,t> (see below) are clearly ungrammatical with the verb *et-* 'do'. Given the grammaticality of (i.c), a type-shifting mechanism is possibly involved whereby the *n*-type numerals is converted into a predicative one.

Cardinality:

Cardinality is just another type of measure (Scontras, 2014). Like weight or length, cardinality relates individuals to points on a scale where the scale is cardinality and the points are natural numbers.

Subsuming dimensional properties like weight, length, and cardinality under a single measure function has several advantages. First, a measure is a mathematical object that quantifies the size of a set. Objects are sets of points in space, but their extent can only be understood by measuring. The size of a set can be measured based on its cardinality.

Second, all measure terms, be them measure words or classifiers, are mutually exclusive.

(9) *üç *tane*/*kilo*/*metre* kalem
three CL kilo meter pencil
'three CL/kilos/meters of pencils'

Conceiving of all such terms as values that the measure head can take provides a natural explanation for this sort of complementarity.

Third, all measure words are relational elements denoting functions from natural numbers to predicates, and are thus assigned to the same type (see next section).

Fourth, classifiers and measure terms follow the same word order restriction in relation to the numeral. If a language uses the [Numeral-CL] order, it also uses [Numeral-M] order, and vice versa.

Finally, numerals, like measure terms, are monotonic expressions (Schwarzschild, 2002; Krifka, 2003). *Kilo*, for instance, is monotonic on the dimensional property of weight, and counting is monotonic on the dimensional

property of cardinality. Nakanishi (2003) presents further evidence demonstrating that monotonicity requirement governs the distributional contrast between non-split (continuous) and split (discontinuous) classifier phrases that appear in nominal and verbal contexts respectively.

4.4 Syntactic composition

This section addresses the syntactic constituency of classifier constructions, and argues that both classifiers and measure terms occupy the same head position of the Measure Phrase (μP), spelling out its varying values. Numerals, on the other hand, fill [Spec, μP]. The μP is syntactically an adjunct that left-adjoins to the NP. The resulting structure is a uniformly left-branching one as also proposed in Croft (1994) and Hsieh (2008) (see Sections 2.3.2 and 2.4.1).

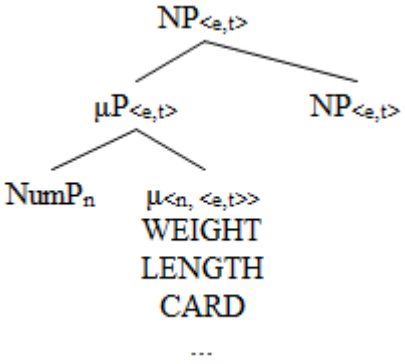
4.4.1 The μP

In Section 4.3, I subsumed canonical measure terms like *kilo* and cardinality under the measure function. Here, I elaborate on the semantic properties of the μP and demonstrate how the syntactic derivation proceeds.

Observe that all measure expressions are Fregean unsaturated objects, requiring the presence of a numeral for them to be saturated. Together with the numeral, the resulting μP denotes a property, which is then attributed to an individual. No measure expression is complete without a numeral. This captures the fact that measure is a function from numerals to predicates. Thus, all μ-heads are of type <n, <e,t>>,[32] associated with the syntax in (10). μ° can host different elements measuring the noun is different ways.

[32] Note that classifier or measure constructions can appear as predicates (i.a), as complements of measure verbs (i.b), and as modifiers of nouns (i.c).

(10) Syntax of μP



This line of reasoning immediately explains several properties of classifier constructions and measure constructions. First, note that classifier and measure constructions are not arguments of the noun (Jackendoff, 1977; Stowell, 1991; Schwarzschild, 2005; Corver, 2009) (after all a noun is perfectly interpretable

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(i) a. The tomatoes are *3 kilos*.
b. The tomatoes weigh *3 kilos*.
c. *three kilos* of tomatoes

Scontras (2014) argues that, judging by their relatively limited distribution, the intransitive uses in (i.a-b) must have been derived from the transitive base in (i.c). As Corver (2009) observes, however, morphological evidence points to the contrary. In general, modifiers carry more morphological material, typically some sort of a linker, than their corresponding predicates. Thus, in Korean, pre-nominal modifier classifier constructions must carry a genitive marker.

(ii) [sye meyng-*uy*] haksyang
three CL-GEN student

(Lee, 2013, p. 256)

Although nothing about the argumentation rests on the position I take, I believe the intransitive (i.e. predicate) version is the basic form and the modifier version is derived. This also squares with Peyraube's (1991) observation that, diachronically speaking, Chinese classifiers originated in the postnominal position and then moved to the prenominal position. If so, the modifier classifiers/measures are probably of type <n, <<e,t> <e,t>>> (which will yield an <<e,t>, <e,t>>-type μP), in contrast to the <n, <e,t>>-type predicative ones (which will yield an <e,t>-type μP). This argument receives further support from the presence of modifier-only (transitive) and predicate-only (intransitive) adjectives.

(iii) a. Modifier-only *former*
This is the [former president]. cf. *The president is [former].

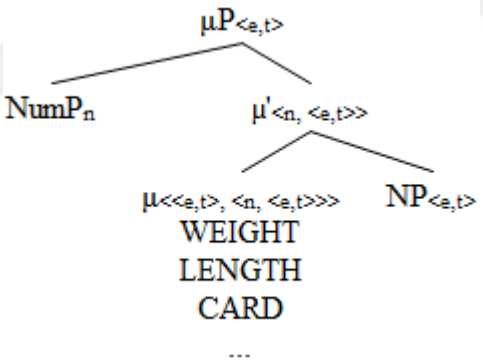
b. Predicate-only *alive*
*This is the [alive president]. cf. The president is [alive].

Throughout the discussion, I remain agnostic about this contrast, and assume for simplicity that classifiers and measure words are of type <n, <e,t>> in their predicative as well as modifier uses, and that the μP combines with the noun by standard modes of composition.

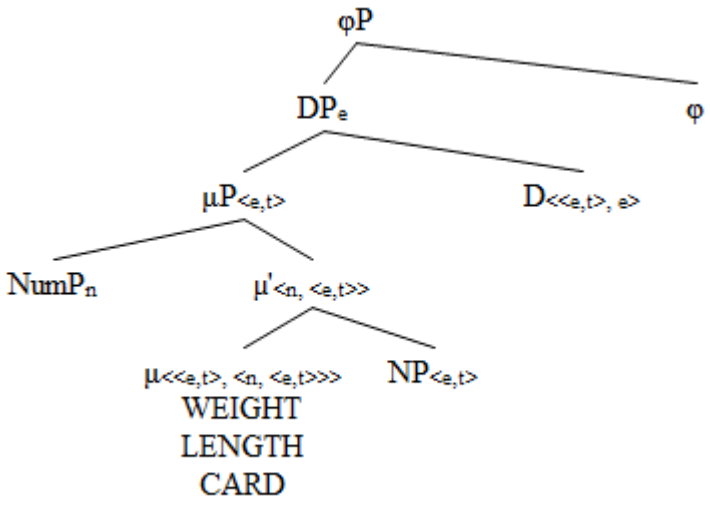
without a classifier or measure word), and thus cannot be occupying its argumental Spec or complement positions. Therefore, the null assumption is that they are adjuncts syntactically.

Second, Turkish is a consistently head-final language, locating complements as well as modifiers to the left of the NP, which is perfectly respected in (10). Third, under the reasonable assumption that Turkish DP must also be head-final, the alternative syntax in (11a) would violate the Final-over-Final Constraint (FoFC) (Holmberg, 2000; Biberauer, Holmberg, & Roberts, 2007; Sheehan, 2013). This is because, per FoFC, the head-final DP in (11b) cannot take the head-initial µP as a complement.

(11) FoFC-violating µP



a.

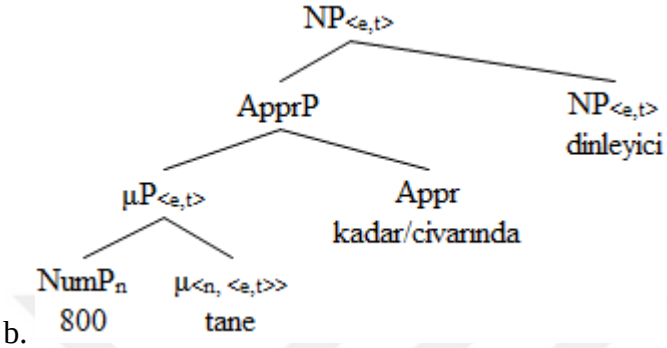


b.

Fourth, approximative modifiers can intervene between the µP and the NP, which can be accommodated with the structure in (10) as in (12b).

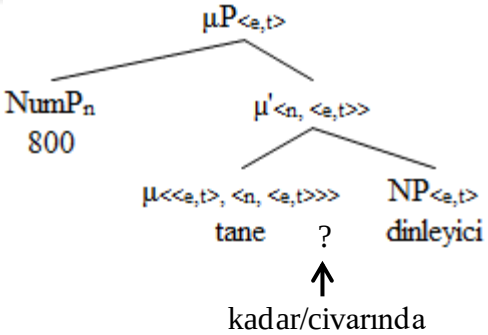
(12) a. Konser-e [8000 tane *kadar/civarında* dinleyici] katıl-dı.
concert-DAT 8000 CL about/around audience participate-PST
'[About 8000 audiences] participated in the concert.'

b.



In contrast, the head-initial µP in (11a) simply does not allow room for approximator heads like *kadar/civarında* 'about/around'.

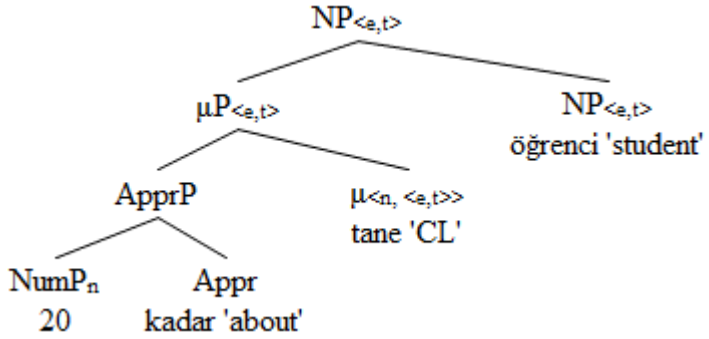
(13) the approximative problem



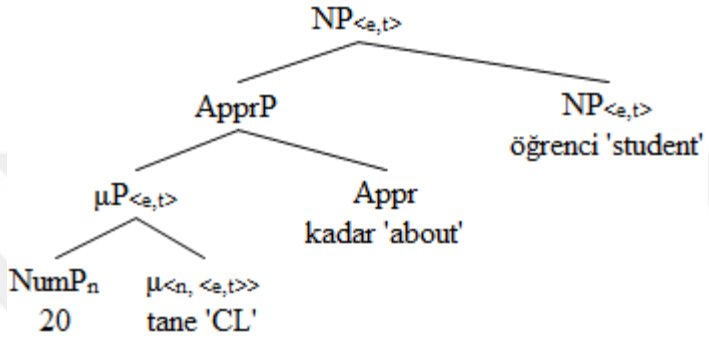
Note in the passing that Approximatives can occupy both the Appr° as in (14a-b) and [Spec, ApprP] as in (14c-d). Further, since they take maximal projections as complements, they can attach to NumP as in (14a) and (14c) as well as µP as in (14b) and (14d).[33]

[33] There are gaps, though. Most native speakers of Turkish I consulted with judge as ungrammatical approximative constructions in which *civarında* 'around' takes a NumP as complement.

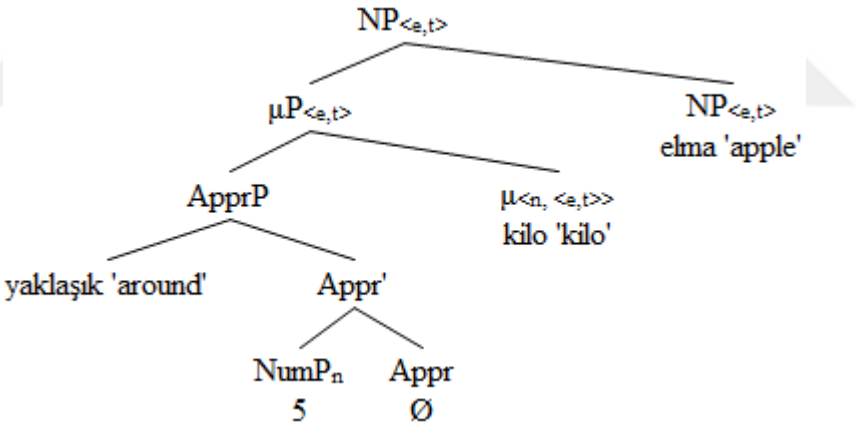
(14) a. [$_{\mu P}$ [$_{NumP}$ 20 kadar] tane] öğrenci [[about 20] CL] student



b. [$_{\mu P}$ [$_{NumP}$ 20 tane] kadar] öğrenci [about [20 CL] student



c. [$_{\mu P}$ yaklaşık [$_{NumP}$ 5] kilo] elma [[around 5] kilo] apple



(i) a. [$_{\mu P}$ 150 tane] *civarında* öğrenci
150 CL around student
'around 150 students'

b. *[$_{NumP}$ 150] *civarında* tane öğrenci
150 around CL student
Int.: 'around 150 students'

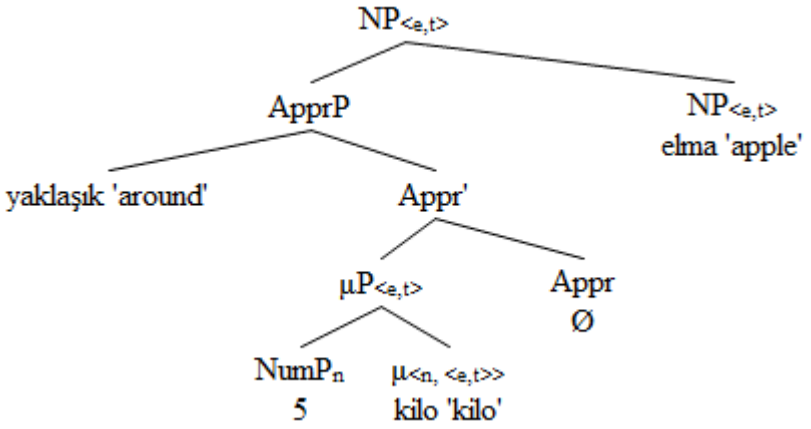
cf. (14a) with *kadar* 'about'

In contrast, *küsur* 'so' only takes NumP complements, establishing that some approximators impose selection on their complements.

(ii) a. [$_{NumP}$ 100] *küsur* tane öğrenci
100 so CL student
'100 or so students'

b. *[$_{\mu P}$ 100 tane] *küsur* öğrenci
100 CL so student
'100 or so students'

d. [$_{\mu P}$ yaklaşık [$_{NumP}$ 5 kilo]] elma [around [5 kilo]] apple



When attached to the NumP, they approximate the numeral; and when attached to μP, they approximate the measure. I assume that in all cases, ApprP does not affect the category or selectional features of NumP/μP; i.e. the properties of NumP/μP "shine through" the ApprP.

4.4.1.1 Structure of classifier constructions

With Scontras (2014), I propose that an atomic classifier like *tane* is the overt spell-out of CARD, which is one of the possible values of μ (see (10) above). This explains a number of properties of classifiers.

First, classifiers measure in terms of cardinality, being perfect candidates for CARD understood as a counting function. This applies to general classifiers like *tane* as well as specific ones like *baş* 'head' (as in *iki baş soğan* 'two heads of onions'). The only difference between general and specific classifiers is that the latter impose some selectional restrictions on their complements. Since the μP is headed by classifiers, the configuration allows for c-command of the noun by the μP, and selection can apply as predicted.

Second, recall that classifiers restrict the domain of the noun to object individuals only. Since shape, size, and texture are relevant for concrete object (but

not abstract kind) individuals, it comes as natural that classifiers/measure words closely interact with such salient properties of object entities.

Third, all μ-heads have to occur with a numeral (15a), hence the term numeral classifiers. In particular, they reject direct combination with D elements (15b).

(15) a. *(iki) tane elma 'two CL apple'

b. *bu tane elma 'this CL apple'[34]

cf. bu iki tane elma 'these two apples'

Given the <n, <e,t>> nature of μ°, (15a) comes as natural. On the other hand, since determiners are type-<<e,t>, e>, the incompatibility of *bu* 'this' with *tane* is also accounted for under type mismatch.

Fourth, this line of reasoning accounts for my earlier assumption that no numeral can directly combine with a noun due to type mismatch. This is because sets can only be counted (i.e. related to numerals) by CARD.

Fifth, assuming that CARD exists as a function, we would predict some languages to mark it overtly, which I believe is the case in classifier languages.

Sixth, given that CARD counts, we correctly predict that classifiers will only be possible with countable nouns.

---

[34] Note that Chinese allows demonstratives to co-occur with classifiers in the absence of a numeral (Cheng & Sybesma, 1999; Cheng & Sybesma, 2005; Zhang N. N., 2009; Zhang N. N., 2011a).

(i) a. zhe-ge ren. 'this CL man'
b. zhe ben shu 'this (volume of) book'

(Zhang, 2011a, p. 74)

The proposal I make requires that these *deictic* classifiers be associated with a different semantics than numeral classifiers. As of now, I have no explanation as to what sort of entities they denote, but Chan (1999) proposes that they are generated at classifier-head and subsequently raise to D. An alternative is that a silent *one* occupies [Spec, μP] (Cheng & Sybesma, 2005; Her, Chen, & Tsai, 2015).

Seventh, and theory internally, if CARD is not the locus of classifiers, we simply run out of slots to insert them into.

Eighth, numerals cannot occupy the predicate position, unless accompanied by a classifier or measure word (Krifka, 1995).

(16) Elma-lar beş *(tane/kilo).
apple-PL five CL kilo
'The apples are five *(in number / kilos).'

This is actually predicted, considering that a numeral, being of type <n>, cannot denote a property, while an <e,t>-type µP can, allowing it to function as a predicate. However, when we insert the words *sayısı* 'number' or *sayıca* 'in number', the classifier-less construction is saved.

(17) a. Elmalar-ın *sayısı* beş (??tane).
apples-GEN number five CL
'The number of apples is five.'

b. Elmalar *sayıca* beş (??tane).
apples in.number five CL
'The apples are five in number.'

Given that words like *sayısı* and *sayıca* denote number, we can safely assume that they spell out cardinality. By extension, the fact that their presence renders the use of a classifier unnecessary (even awkward) puts such words on a par with classifiers semantically. I take this as conclusive evidence that classifiers spell out CARD.

Finally, this way of reasoning might help overcome some intriguing properties of numerals crosslinguistically. Of particular importance is the syntactic status of complex numerals like *two thousand five hundred and twenty-three*. Given their "iterative" nature (Booij, 2010, p. 86), arguments have been made that such numbers are created "entirely in syntax and interpreted by the regular rules of

semantic composition" (Ionin & Matushansky, 2006, p. 316). Thus, complex numerals (and by extension simplex ones as well) must project to syntactic phrases.[35] This is also supported by the fact that different parts of a complex numeral enter into quite predictable additive, subtractive, multiplicative, and divisive relations with one another (Zweig, 2005; Her, 2011; Her & Chen, 2013).

On the other hand, both simplex and complex numerals have been observed to assign case to the noun they compose with (Hurford, 2003; Ionin & Matushansky, 2006). This is typically the case with Russian, in which low cardinals assign paucal and high cardinals assign genitive and even oblique case.

(18) a. cetyre saga
four step.PAUC
'four steps'

b. sest sagov
six step.GEN.PL
'six steps'

c. 250 sagami
250 step.INST
'250 steps'

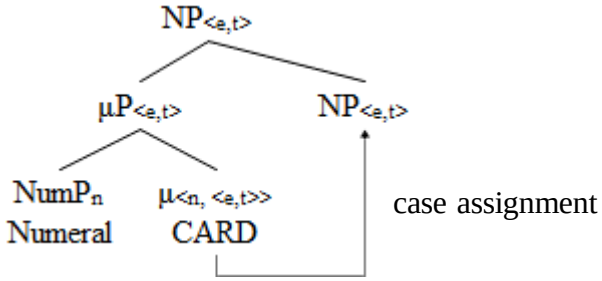
(Ionin & Matushansky, 2006, p. 333)

Under the assumption that only heads assign case to their complements, (18) strongly suggests that cardinals (simplex or complex) must occupy the head position of some projection. Thus, we have two conflicting sets of data: one suggesting that cardinals are phrases, the other suggesting that they are heads.

The μP analysis of cardinals proposed in this study can potentially overcome this problem. Recall that a cardinal expression is composed minimally of CARD occupying μ°, and a numeral occupying [Spec, μP], and that no numeral can directly combine with an NP. If we extend this analysis and assume crosslinguistically that all numeral expressions project to μP, we can then conclude that case is assigned by overt or covert CARD occupying μ° as in (19).

[35] Koşaner (2016) provides a syntactic account of Turkish cardinal as well as ordinal numerals based on Booij's (2010) categorial distinction between different types of numerals and Hurford's (2003) Packaging Strategy. A brief overview of problems surrounding the syntax and semantics of numerical expressions can be found in Corver, Doetjes and Zwarts (2007).

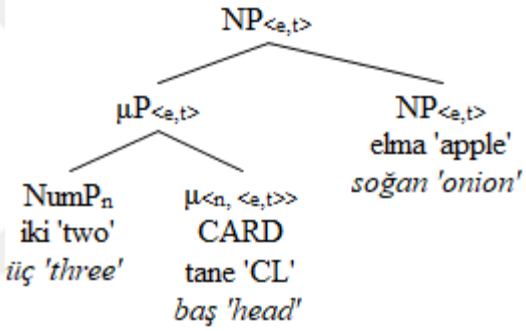
(19) Case-assigning cardinals[36]



Whether and to what extent this line of reasoning is on the right track will need to be further investigated.

The picture we thus get for classifier constructions is:

(20) Syntax of CLCs

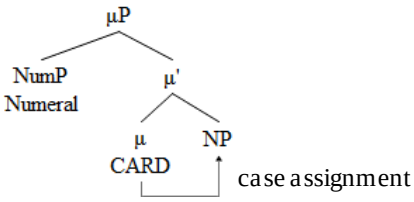


4.4.1.2 Structure of measure constructions

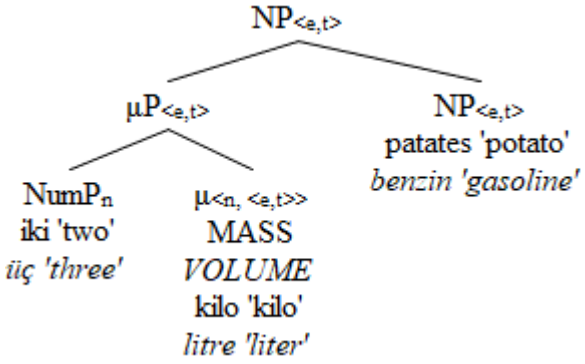
By now it must have been clear what the structure of other measure phrases should look like. For a standard measure like *kilo* or *liter* I propose (21).

[36] One might object that an adjunct cannot assign case. But if we assume, with Cinque's (2011) cartographic model, that modifiers project phrases with their own dedicated heads, the analysis can easily be modified to accommodate such data.

(i) Case assignment by µP in a cartographic model



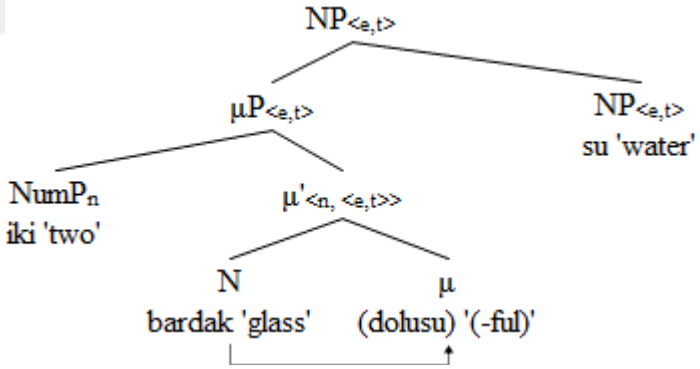
(21) Standard Ms



Container measures, on the other hand, are not measure words in and of themselves, as we have already seen. I follow the standard argument that they are actually embedded under an overt or covert μ, or else raised to μ where they assume measure semantics through conflation with μ.

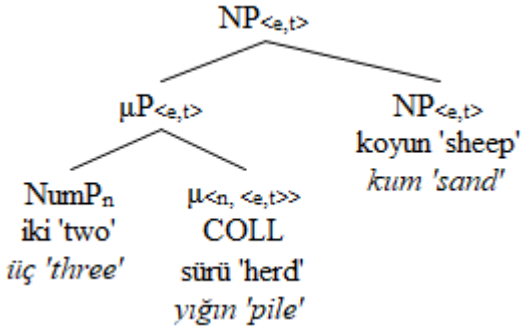
(22) Container Ms

üç bardak (dolusu) su 'three glass(ful)s of water'



As for collective classifiers, I assume that they too are measures creating a unit that is not in the denotation of the noun. Considering that measures are in general insensitive to the internal atomicity of the noun (as evidenced by the fact that they can freely combine with countable as well as uncountable nouns), they must themselves do a new partitioning that serves as input for counting.

(23) Collective Ms



4.4.1.3 Classifier – measure word contrast?

At this point, one might object that the role of classifiers is different from that of measure words, and thus cannot be subsumed under the same semantic function or syntactic position. Recall from Section 2.4.2 that Cheng and Sybesma (1999), Borer (2005), and Zhang (2009) argue for a split analysis of classifier constructions and measure constructions. Let us review some of their arguments.

Argument 1: Measure words are available in all languages, classifiers are not.

This distinction is not thus clear-cut, however. On the one hand, we have optional classifier languages like Turkish, and on the other hand, even non-classifier languages like English do have a number of classifiers (Lehrer, 1986). It is just that non-classifier languages have not generalized the classifier system (see Csirmaz & Dékány's (2014) arguments for Hungarian being a classifier language despite claims in the literature to the contrary). Under the present proposal, this means that non-classifier languages allow CARD to be covert, obligatory classifier languages require CARD to be overt, and optional classifier languages have both options.

Argument 2: Classifiers impose selectional restrictions, measure words do not.

This is simply not true. Measure words like *liter* select liquid-denoting complements, while *kilo* selects non-liquid ones. Volume denoting *cc*, however, can combine with liquids as well as solids. Similar restrictions apply to collective classifiers (cf. *flock* for animals, *deck* for cards, etc.) as well as kind terms (cf. *breed* for animals).

Argument 3: Measure words are nouns rather than functional elements.

For one thing, not all measure words are nouns (cf. *kilo/liter*) though there are some (see Section 4.2). However, I already demonstrated that such lexical elements, e.g. container measures, are actually embedded under μ, but still function as measures and thus pattern with standard measure words.

(24) a. *(üç) kilo elma
three kilo apple
'three kilos of apples'

b. *(iki) bardak su
two glass water
'two glasses of water'

Argument 4: Measure words can be modified by adjectives while classifiers cannot, highlighting the nominal status of the former.

(25) is adduced in support of this argument.

(25) a. yi xiao / da xiang shu (Chinese)
one small big box book
'a small/big box of books'

b. *yi xiao / da zhi gou
one small big CL dog
'a small/big dog'

Her & Hsieh (2010), however, challenge the validity of (25b), based on (26).

(26) a. yi da ke pingguo
one big CL apple
'a big apple'

b. yi da ben shu
one big CL book
'a big (volume of) book'

(Her & Hsieh, 2010, p. 535)

One thing to note at this conjuncture is that measure words do not freely allow for adjectival modification. The adjectives that appear before them typically denote size (e.g. *big/small*) and fullness (e.g. *full*). Thus, while *üç büyük bardak çay* 'three big glasses of tea' is grammatical, *üç kırmızı bardak çay* 'three red glasses of tea' is out. Of particular importance is the Chinese expression in (26a) where even a classifier is adjectivally modified.

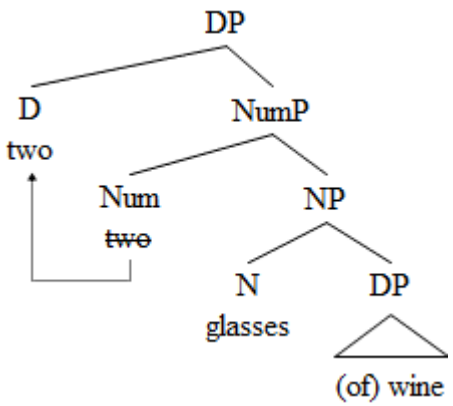
I thus conclude, with Tang (2005) and Hsu (2015), that the purported CL/M contrast, if exists at all, should not be dealt with syntactically.

4.4.2 Counting – measuring ambiguity

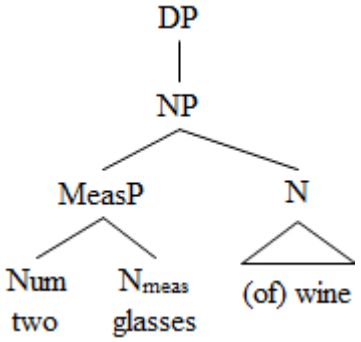
Recall Rothstein's (2011) argument that the two readings (counting vs measuring) of classifier constructions involving a container classifier are associated with different structures, repeated below from Section 2.3.3.

(27) three glasses of wine

a. Counting reading



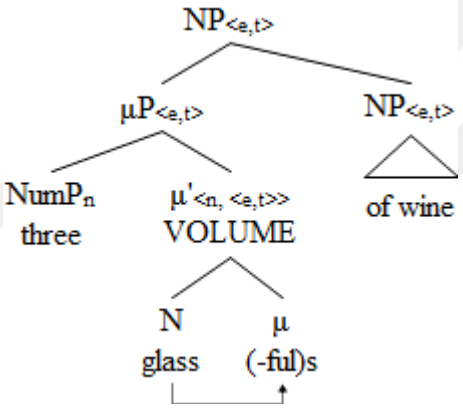
b. Measuring reading



Note that there is no μ in this representation. We have however been arguing that no numeral can directly combine with a noun. Thus, this representation, though essentially correct, is slightly problematic. In what follows, I make an alternative proposal that captures the same interpretive difference without deviating from the current model.

The measuring reading receives an easy explanation, once we assume that the noun is actually embedded under a covert μ (cf. (22)) and raises to or conflates with μ where is gets associated with its canonical measuring semantics.

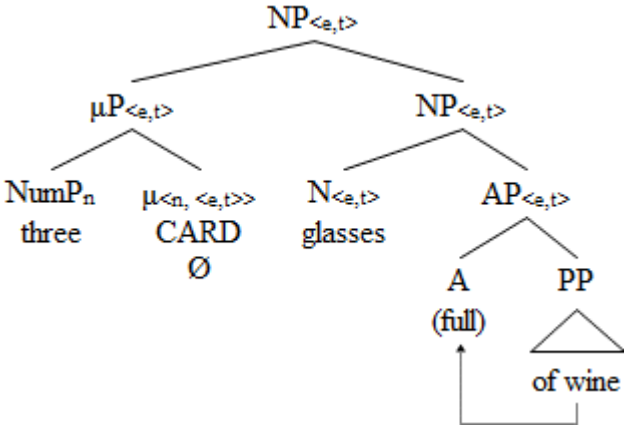
(28) Measure reading of container Ms



The counting reading, however, is slightly more complicated. Here, we are clearly talking about three actual glasses which happen to be full of wine. It suffices then to assume that the noun *glasses* takes an AP complement headed by a covert *full*.[37]

[37] Deriving the surface word order in head-final languages necessarily involves movement of the AP across the NP. I tentatively propose the derivation in (i.a) for (30a') and (i.b) for (30a).

(29) Counting reading of container Ms[38]

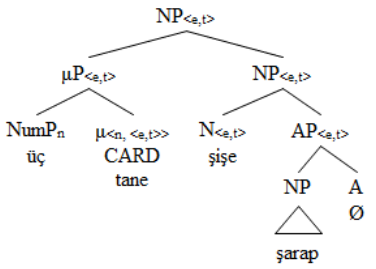


This representation predicts that, since the NP *glasses* is actually being counted, the µ-head can be filled by another classifier or measure word. (30) establishes that this is the case in Turkish.

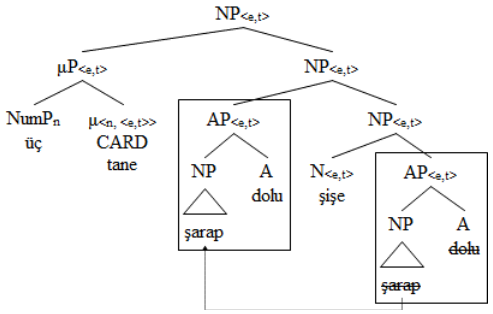
(30) a. Ban-a üç *tane* şarap dolu şişe getir.[39] (general CL)
I-DAT three CL wine full bottle bring
'Bring me three bottles full of wine.'

a'. ??Ban-a üç *tane* şişe şarap getir.
I-DAT three CL bottle wine bring
'Bring me three bottles of wine.'

(i) a. üç şişe şarap
'three glasses of wine'



b. üç tane şarap dolu şişe
'three glasses full of wine'



[38] Scontras (2014) makes a similar proposal. In his analysis, the complement of the NP is a PP, not an AP. Since nothing about the analysis hinges on this contrast, I do not go into details here.

[39] Note that the alternative construction in (i) has a different meaning. Recall that the classifier in such constructions is actually a lexical item denoting a set rather than a measure value.

(i) üç *tane* şarap şişesi
three CL wine glass
'three wine glasses (that may or may not contain wine)'

b. üç *dizi* şarap dolu şişe (collective CL)
three row wine full bottle
'three rows of bottles full of wine'

Particularly telling is (30a'), which allows the CL to co-occur with the M in the same construction. As for the highly marked status of this construction, I would like to hypothesize that it results from the ungrammaticality of **şişe şarap (dolu)* 'bottle(ful)s of wine'. The correct version, in line with head-finality of Turkish, has to be *şarap (dolu) şişe* 'bottle(ful)s of wine'. The inversion suggests that the container word *şişe* 'bottle' has raised at some point in the derivation, ending up with the same slot as the CL *tane*. I will not go into any further details here, hoping to study these constructions at some future work.

In short, individuating/measure ambiguity of container measures can easily be captured under the proposed model with no further stipulation required.

4.4.3 Place-holder classifiers?

Given this background, one might wonder the status of the classifiers in the following examples.

(31) a. Dünya-da yaklaşık 4200 *tane* inanç var.
world-LOC about 4200 CL belief exist
'There are about 4200 beliefs in the world.'

b. Akl-ım-a bir *tane* çözüm gel-di.
mind-1SG.POSS-DAT one CL solution come-PST
'I conceived of a solution.'

In these sentences, *tane* combines with a noun referencing abstract notions like *belief* and *solution*. How do we make sense of such data?

Given the role of classifiers as modifiers restricting the nominal domain to object individuals, we predict these words to contain both kinds and objects in their

extension. That this is the case is evidenced by the fact that, beside appearing with object *tane* as in (31), these abstract terms can also appear with *tür* 'kind'.[40]

(32) a. İki *tür* inanç-la ilgilen-iyor-um: monoteizm, ve politeizm.
two kind belief-INST be.interested-IMPF-1SG: monotheism and polytheism
'I am interested in two kinds of belief(s): monotheism and polytheism.'

b. İki *tür* çözüm-den bahsed-elim: geçici ve kalıcı çözüm-ler.
two kind solution-ABL talk-1PL.OPT: temporary and permanent solutions
'Let us talk of two kinds of solution(s): temporary and permanent ones.'

Thus, even abstract terms are like *belief* and *solution* are two-way ambiguous between a kind and an object reading. This, however, requires us to conceive of object individuals more generally, including not only physical entities but also abstract ones. In any case, classifiers retain their object selecting roles.

Next, consider the data in (33).

(33) a. san *(ge) shui-di (Chinese)
three CL water-drop
'three drops of water'

a'. san *(ge) shu-ben
three CL book-CL
'three volumes of books'

(Zhang, 2011a)

b. üç (tane) su damlası (Turkish)
three CL water drop
'three drops of water'

[40] Note that our perception of kinds come from at least two different sources: (i) natural kind based on taxonomy, and (ii) perceived kind based on any characteristics that help categorize (Liao & Wang, 2011). Crucially, only the natural kind is a true kind compatible with Link's (1983) group forming operator ↑.

(i) a. The dog is a loyal animal. (natural kind)
b. *The hairy dog is a lovely creature. (perceived kind)
cf. Pencils are useful tools.

c. *The pencil is a useful tool.
cf. Pencils are useful tools.

Kinds of solutions as *temporary* or *permanent* as in (29b) fall under the perceived kind.

b'. üç (tane) kağıt yaprağı
three CL paper sheet
'three sheets of paper'

Zhang (2011a) argues that the CL *ge* in such examples has no function at all, simply appearing there as a place holder (on a par with English dummy *do* which surfaces as a tense/agreement bearer). Her reasoning goes as follows. Before it can be counted, the denotation of a noun must be delimited (by Del), so as to create a countable unit. This is performed by classifiers. The section after *ge* is a compound headed by a specific classifier, which has already delimited the denotation of the noun; i.e. *shui-di* 'water drop' and *shu-ben* 'book volume' are already countable. Interestingly, though, the general classifier *ge* must still be used to ensure grammaticality in Chinese. Thus, Zhang (2011a) concludes, the appearance of *ge* in such constructions is not semantically but syntactically motivated, hence the term place holder classifiers.

This is problematic, however. First, given the function of classifiers as domain restrictors, Zhang's (2011a) analysis of semantically vacuous classifiers cannot be maintained. Second, her analysis lacks CARD, which we take to be compulsory in counting contexts. Third, recall from Section 4.2.3 that classifiers that participate in compounding are in fact nouns of type <e,t>. Thus, Chinese *di* 'drop' and *ben* 'volume' as well as Turkish *damla* 'drop' and *yaprak* 'sheet' are not classifiers of type <n, <e,t>>, but nouns of type <e,t>. If so, the overall compound must also be of type <e,t>, denoting sets of object as well as kind individuals, on a par with regular Ns. This is indeed the case.

(34) a. iki kağıt *yaprağı* (kind/object)
two paper sheet
'two sheets of paper'

i. two kinds of sheets of paper, i.e. A4 and Letter
ii. two individual sheets of paper, i.e. this and that

b. iki tane kağıt *yaprağı* (*kind/object)
two CL paper sheet
'two sheets of paper'

c. iki tür kağıt *yaprağı* (kind/*object)
two kind paper sheet
'two kids of sheets of paper'

Therefore, classifiers in Zhang's (2011a) examples are not necessarily vacuous place holders, but rather perform their grand task of restricting the domain of the noun to object individuals.

Fourth, recall that Turkish *tane* has both a lexical and a functional character. The lexical one, meaning *grain*, can participate in compounding if the non-head noun denotes a granular aggregate. The functional one however is a relational element barred from lexical processes. This line of reasoning makes two interesting predictions, both of which are confirmed. The first is that *tane* in its lexical form should include kinds as well as objects in its denotation (35a); and the second is that the two forms of *tane* should in principle co-occur, one as the compound head, and the other as CARD (35b).

(35) Kind/object ambiguity of *tane*

a. kum taneleri 'sand grains'

i. meaning kinds of sand like fine or coarse (kind)
ii. meaning object on your palm (object)

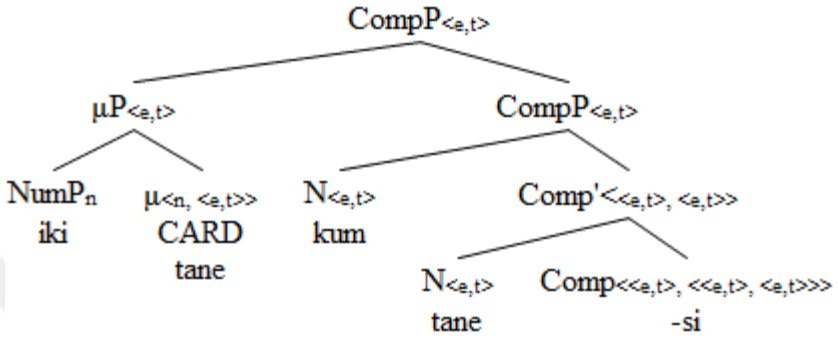
b. ?Avuc-um-da *iki tane kum tanesi* var.[41]
hand-1SG.POSS-LOC two CL sand grain exist
'There are two sand grains on my palm.'

[41] For some speakers, constructions in which the CARD and the compound head are phonologically identical are marked in Turkish, though they are much better compared to constructions involving two functional classifiers. Nevertheless, they have a much freer distribution in Chinese.

cf. *El-im-de *iki tane kitap tanesi* var.
hand-1SG.POSS-LOC two CL book CL exist
'There are two books in my hand.'

Thus, we have (36) as the representation of (35b). Note in particular the syntactic position as well as the semantic type of either occurrences of *tane*.

(36) CL doubling



I thus conclude that Zhang's (2011a) problematic data actually falls out from the proposed model with no unwarranted stipulations like place-holders vs delimitive classifiers. Even in classifier doubling cases, classifiers serve to restrict the domain of bare nouns to object individuals.

4.5 Multiple classifier constructions

Apart from classifier doubling constructions, there are cases in which several classifiers appear in what is called Multiple Classifier Constructions (MCLCs). These basically come in two variants: partitive MCLCs, and attributive MCLCs. In this section, I address their syntax/semantics, and demonstrate how they fit with the current proposal.

(i) a. san duo hua-duo
three CL flower-CL
'three flowers'

b. san qun yang-qun
three CL sheep-CL
'three flocks of sheep'

c. san di shui-di
three CL water-CL
'three drops of water'
(Zhang, 2011a).

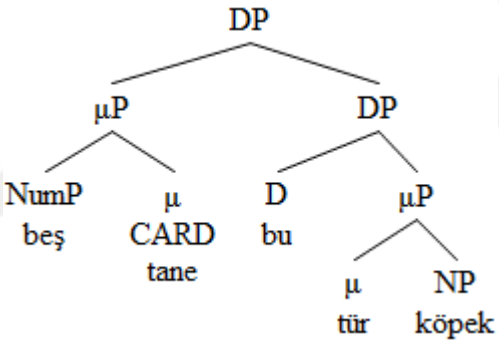
4.5.1 Partitive MCLCs

The data at issue in this section is MCLCs like

(37) El-im-de *beş tane bu tür köpek* var.
hand-1SG:POSS-LOC five CL this kind dog exist
'I have five dogs of this kind.'

In this sentence, the two µPs *beş tane* 'five CL' and *bu tür* 'this kind' appear to be stacked on top of one another. Assuming *kind* terms to be classifiers, we appear to have (38).

(38) MCLCs (first impression)



This representation is wrong. To see why, observe that all the sentences in (39) are semantically identical.

(39) a. El-im-de *beş tane bu tür* köpek var.
hand-1SG:POSS-LOC five CL this kind dog exist

b. El-im-de *beş tane bu tür*-den köpek var.
hand-1SG:POSS-LOC five CL this kind-PART dog exist

c. El-im-de *beş tane bu tür* köpek-ten var.
hand-1SG:POSS-LOC five CL this kind dog-PART exist

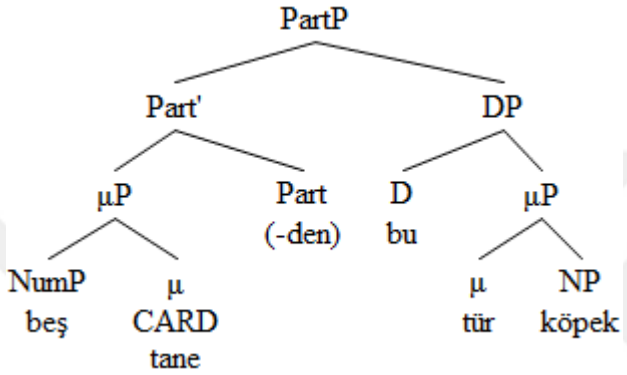
d. El-im-de *bu tür*-den *beş tane* köpek var.
hand-1SG:POSS-LOC this kind-PART five CL dog exist

e. El-im-de *bu tür* köpek-ten *beş tane* var.
hand-1SG:POSS-LOC this kind dog-PART five CL exist

All: 'I have five dogs of this kind.'

In other words, the MCLC in (37) is actually an example of a partitive construction (Liao & Wang, 2011), associated with the following (preliminary) syntax.

(40) Partitive MCLCs (preliminary)



This representation, too, is slightly problematic. Recall that µ is an unsaturated object of type <n, <e,t>>, requiring the presence of a numeral; but the downstairs µ in (40) simply lacks a numeral. To get round this problem, I assume that kind terms like *tür* 'kind' also have two forms: an <e,t>-type lexical one, and an <n, <e,t>>-type functional one. This line of reasoning has the added advantage of explaining why *tür* 'kind' can appear with D-elements while measures and classifiers cannot.

(41) *bu tür köpek* 'this kind of dog'

cf. **bu tane/sürü köpek* 'this CL/flock of dogs'

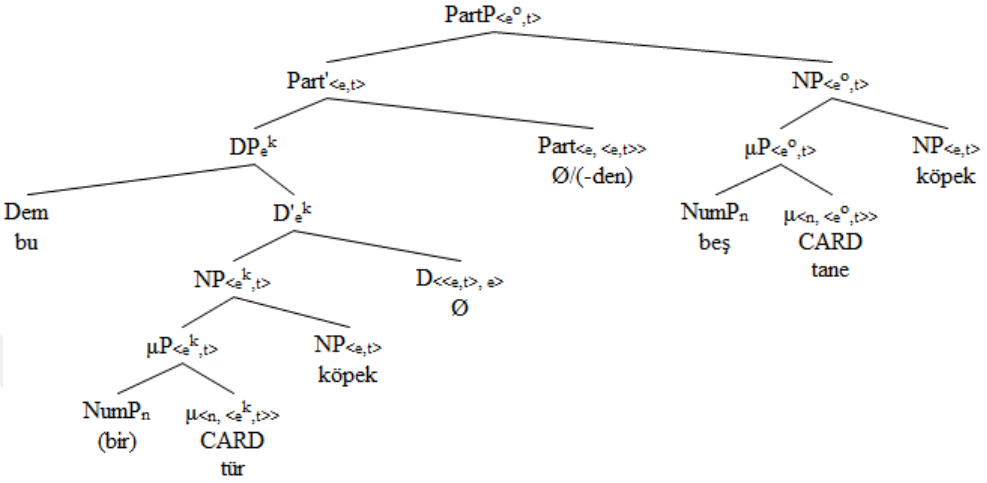
As a byproduct, we also account for the fact that compounds involving *tür* as the head and those in which *tür* appears before the NP have identical semantics.[42]

[42] There are slight differences, however. While *iki köpek türü* 'two dog kinds' can only take the kind domain, *iki tür köpek* 'two kinds of dog' can also refer to individual dogs.

(42) bu tür köpek ‘this kind of dog’ = bu köpek türü ‘this dog kind’

Coupled with the fact that a DP may contain numerals, the correct representation must be as in (43).

(43) Partitive MCLCs (final version)[43]



I assume that the downstairs NumP is filled by a cover *one*. Such an assumption is independently required as this slot can normally be filled by other numerals (see (44) below). Indeed, *bu tür köpek* ‘this kind of dog’ refers to singularities only, further suggesting the presence of *one*. In fact, the alternative *bu bir tür köpek* ‘this one kind of dogs’ is degraded in grammaticality, presumably due to blocking by covert version. Further, the use of covert *one* with varying μ heads has also been observed crosslinguistically, particularly in Chinese.

(i) a. ??Can iki köpek türü-nü dalaş-tır-dı.
Can two dog kind-ACC fight-CAUS-PST
‘Can made two dog kinds fight.’

b. Can iki tür köpeğ-i dalaş-tır-dı.
Can two kind dog fight-CAUS-PST
‘Can made two kinds of dogs fight.’

I formulate an explanation for these constructions in Section 4.7.

[43] I assume standardly that, in a partitive construction, both the lower DP and the higher QP have a copy of the NP, and that one copy is deleted at PF.

Here is dead end. Given that the downstairs classifier *tür* 'kind' in (43) has already restricted the denotation of the bare noun to kind individuals only, how can the construction be compatible with the object-selecting *tane*, and receive an object reading? It has been argued that the Part(itive) head unpacks an entity of type *e* to a set of type <e,t> that contains the entity as a subset (Ladusaw, 1982; Barker, 1998; Zamparelli, 1998; Schwarzschild, 2002; Ionin & Matushansky, 2006). Liao & Wang (2011), on the other hand, add that the partitive head removes the kind/object restriction from the DP. Therefore, the upstairs classifier *tane* in partitive MCLCs still functions as a disambiguator, singling out object individuals. I conclude thus that classifiers carry their function over to MCLCs.

The distribution of MCLCs is rather restricted, tough. Compare (44) to (45).

(44) Grammatical partitive MCLCs

a. El-im-de bu tür köpek-ten beş tane var.
hand-1SG.POSS-LOC this kind dog-PART five CL exist
'I have five dogs of this kind.'

a'. Elimde bu iki tür köpekten beş tane var.
'I have five dogs of these two kinds.'

b. El-im-de bu tür şarap-tan beş şişe var.
hand-1SG.POSS-LOC this kind wine-PART five bottle exist
'I have five bottles of this kind of wine.'

b'. El-im-de bu iki tür şarap-tan beş şişe var.
'I have five bottles of these two kinds of wine.'

c. *El-im-de bu deste kağıt-tan beş tane var.
hand-1SG.POSS-LOC this deck card-PART five CL exist
'I have five cards of this deck.'

c'. El-im-de bu iki deste kağıt-tan beş tane var.
'I have five cards of these two decks.'

(45) Ungrammatical partitive MCLCs

a. *El-im-de bu tane köpek-ten iki tür var.
hand-1SG.POSS-LOC this CL dog-PART two kind exist
'I have two kinds of this dog.'

a'. *El-im-de bu beş tane köpek-ten iki tür var.
'I have two kinds of these five dogs.'

b. *El-im-de bu şişe şarap-tan iki tür var.
hand-1SG.POSS-LOC this bottle wine-PART two kind exist
'I have two kinds of this bottle of wine.'

b'. *El-im-de bu beş şişe şarap-tan iki tür var.
'I have two kinds of these five bottles of wine.'

c. *El-im-de bu tane kağıt-tan iki deste var.
hand-1SG.POSS-LOC this CL card-PART two deck exist
'I have two decks of this card.'

c'. *El-im-de bu beş tane kağıt-tan iki deste var.
'I have two decks of these five cards.'

What is the source of across-the-board ungrammaticality of the MCLCs in (45)? Schwarzschild (2002) observes that measure phrases are subject to the monotonicity condition. Monotonicity requires that part-whole relations are tracked. In partitive MCLCs, the whole is provided by the downstairs DP and the part by the upstairs μP. In English, for instance, non-monotonic μPs cannot appear in pseudo partitives with *of,* while monotonic ones must.

(46) a. two {kilos *(of) flour / bottles *(of) wine} (monotonic)

b. *two {degrees of water / kilos of a baby} (non-monotonic)

Back to the MCLCs above, we see that all the grammatical ones are monotonic. (44a-a') is explained under Chierchia's (1998a; 1998b) proposal that a kind is the largest set of its instantiations. Here, *bu tür* 'this kind' and *bu iki tür* 'these two kinds' are the set, and *beş tane* 'five' is the subset. Since individuals

instantiating a kind constitute a subset of that kind, monotonicity is respected, and we get a grammatical construction. Likewise, *beş şişe şarap* 'five bottles of wine' constitutes a subset of *bu tür şarap* 'this kind wine' or *bu iki tür şarap* 'these two kinds of wine'. Similarly, *beş tane kağıt* 'five cards' is a proper subset of *bu iki deste kağıt* 'these two decks of cards'. Each of these constructions track part-whole relations. The ungrammatical (44c) is due to *bu deste kağıt* 'this deck of cards' being ungrammatical. This is because classifiers in Turkish, being of type <n, <e,t>>, always require the presence of a numeral.

In (45), however, there are two sources of ungrammaticality. (45a,b,c) are ungrammatical for the reason (44c) is; namely due to the ungrammaticality of *bu tane köpek* 'this CL dog', *bu şişe şarap* 'this bottle of wine', and *bu tane kağıt* 'this CL card'. In (45a',b'c'), however, there is a monotonicity violation. Here is how. Suppose that we wish to increase the number of kinds of dogs in (45a') from two to three. Do we also need to increase the number of dogs from five to, say, six? Clearly not. In other words, *more kinds of dogs* does not necessarily mean *more individual dogs*. The same goes for (45b') and (45c'): Having more kinds of wine does not necessitate having more wine, and increasing the number of decks does not require adding cards to the decks. These highlight the non-monotonic nature of such expressions. As such, they cannot participate in measure constructions.

To sum up, stacking of classifier constructions on top of one another is not allowed: Those that seem stacked are actually partitive constructions. We have also seen that even such constructions respect our proposal that classifiers restrict the domain of the bare noun to object individuals. Finally, ungrammatical partitive MCLCs can be explained with reference to well established constraints like monotonicity without complicating the model.

4.5.2 Attributive MCLCs

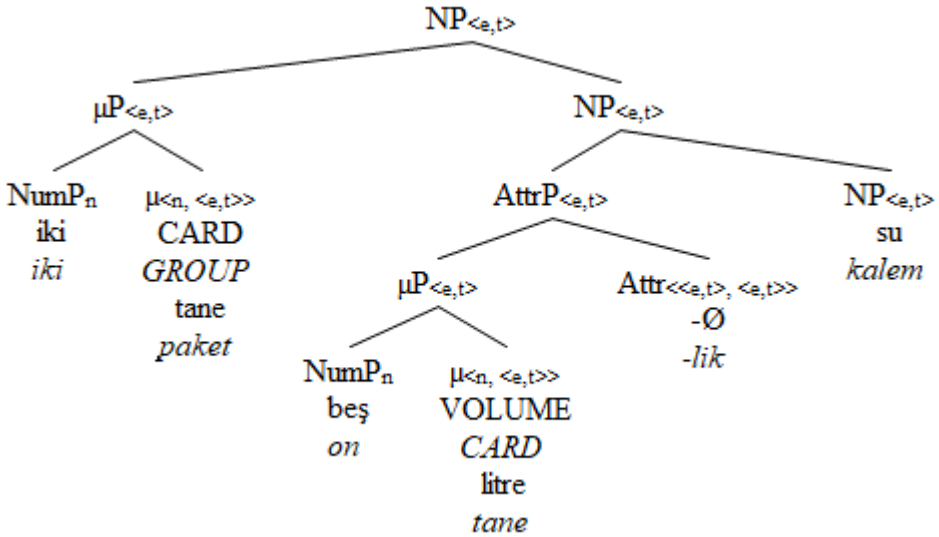
Another set of data involving multiple classifier constructions comes from attributive µPs.

(47) a. Bakkal-dan *iki tane beş litre(-lik)* su al.
market-ABL two CL five liter-ATTR water buy
'Go get two five-liter waters from the market.'

b. *İki paket on tane*(-lik)* kalem al-abil-ir mi-yim?
two pack ten CL-ATTR pencil get-ABIL-PRS QUES-1SG.POSS
'Can I get two ten-pack pencils?'

The µP in such constructions is embedded under the attributive marker *-lIk*, which is optionally overt in (47a) but obligatorily so in (47b). Both the attributive and the matrix µ heads require a numeral as predicted. Thus, I propose the following syntax for attributive MCLCs.

(48) Attributive MCLCs



Unlike Partitive µPs which track monotonic dimensions of objects, attributive µPs describe non-monotonic properties of them (Schwarzschild, 2006; Cornilescu, 2009). As such, attributive µPs interact with the individuals in the denotation of the noun distributively, like regular adjectives do. Hence, for a sentence like *lazy*

students to be true, it must be the case that each student in the denotation of the noun is lazy. Likewise, in *two five-liter waters*, each pack of water must measure five liters. This distributivity requirement is the reason why kind words are ruled out in attributive MCLCs.

(49) Kind in attributive MCLCs

**iki(-şer) tür-lük on tane* kedi
two-DIST kind-ATTR ten CL cat
'ten two-kind cats (i.e. ten cats of two kinds each)'

cf. *iki(-şer) kiloluk on tane* kedi 'ten two-kilo cats (each weighs two kilos)'

This conclusion is further strengthened by the observation that kind terms can participate in attributive MCLCs, provided that they appear as the downstairs µ-head.

(50) iki?(-şer) tane-lik on tür kedi
two-DIST CL-ATTR ten kind cat
'two cats of ten kinds each'

In (49), the distributivity requirement dictates that the attributive µP *two kinds* apply to each one of *ten cats*. However, no cat can instantiate more than one kind at the same time, hence the ungrammaticality. In (50), on the other hand, each one of *ten kinds* can contain two cats, under a scenario where a pet-shop only keeps two members of each kind of cats. As such, the construction respects distributivity, leading to a grammatical derivation.

Once again, we conclude that stacking of µPs is ruled out, the µP can only combine with a single nominal. Seemingly stacked µPs are instances of either partitive MCLCs (in which case the downstairs µP is embedded under PartP) or attributive MCLCs (in which case the downstairs µP is embedded under AttrP).

4.6 [CL/M + NP] constructions

This section addresses the syntax and semantics of [CL/M + NP] constructions. The significance of these constructions is that, in aberrant violation of what we have been pursuing so far, they do not require the presence of a numeral.

Consider the following examples.

(51) a. *salkım/kokteyl* domates
truss cocktail tomato
'truss/cocktail tomatoes'

b. *gram* altın
gram gold
'1-gram gold coins'

c. *kutu* kola
can coke
'coke-in-can'

What is the status of the CL/M in these constructions? They cannot be occupying μ, as they can co-occur with another CL.

(52) iki *tane* {salkım domates / gram altın / kutu kola}
two CL truss tomato / gram gold / can coke
'two {truss tomatoes / 1-gram gold coins / cokes-in-can}'

They cannot be modifiers of the noun either, as the following contrast shows.

(53) a. pahalı / kırmızı *bir* kitap
expensive red a book
'an expensive/red book'

a'. ?*bir* pahalı/kırmızı kitap

b. *salkım *bir* tomates / gram *bir* altın / kutu *bir* kola
truss a tomato / gram a gold / can a coke
'a truss tomato / 1-gram gold coin / coke-in-can'

b'. *bir* {salkım domates / gram altın / kutu kola}
'a {truss tomato / 1-gram gold / coke-in-can}'

(53a-a') establish that modifiers tend to appear to the left of the indefinite *bir* 'one'. These contrast with (53b-b'), making a modifier analysis of (51) inappropriate.

I propose that [CL/M + NP] constructions are actually bare N-N compounds. Göksel and Kerslake (2005) state that such compounds do not mark the head/non-head relation between the two Ns, and that they are restricted in distribution. If so, (52) receives an easy explanation given that compounds can appear under µP. (53b-b') is also explained given that no modifier can split the Ns of a compound.

The compound analysis is also appealing in that *salkım domates* 'truss tomato' denotes a kind of tomato, i.e. the [CL/M + NP] constructions denote novel concepts. These compounds only differ from canonical compounds in lacking the compound marker *-sI*. In a sense, these expressions parallel those in (54).

(54) a. döner sermaye / kızarkadaş / yün çorap
floating capital / girlfriend / wool sock

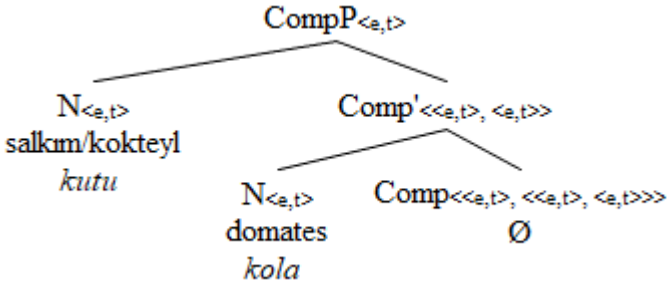
b. *döner *bir* sermaye / *kız *bir* arkadaş / *yün *bir* çorap

Note that *salkım domates* 'truss tomatoes' is a head-final compound denoting a kind of tomato, and the expression as a whole has nothing to do with *salkım* 'bunch'. Thus, (55) is about a single tomato, not a bunch.

(55) Ban-a *bir tane* salkım domates ver.
I-DAT one CL bunch tomato give
'Give me a (single) truss tomato.'

Against this background, I suggest that [CL/M + NP] constructions have the following syntax.

(56) [CL/M + NP] constructions



Pending further research, I propose for constructions like (57), in which the CL/M is obligatorily reduplicated, that the phrase is a VP level adverbial. Note however, that the reduplicated CL/M in these constructions is indeed a modifier, and does not form a compound with the NP.

(57) Tezgah-ın üst-ün-de salkım *(salkım) domates-ler var-dı.
Counter-GEN top-POSS-LOC bunch bunch tomato-PL exist-PST
'There were bunches of tomatoes on the counter.'

Thus, the argument that CLs/Ms are type-<n, <e,t>> relational elements that are unsaturated without a numeral still applies. [CL/M + NP] constructions are not classifier constructions, but N-N compounds lacking an overt compound marker.

4.7 The puzzle of 'kind' words

The final section of this chapter discusses the puzzle associated with kind terms, and develops a partially formulated account of their syntax and semantics.

Consider the challenge posed by the following example.

(58) a. Can *iki tür köpeğ*-i birbiri-yle dalaş-tır-dı.
Can two kind dog-ACC each.other-COM fight-CAUS-PST
'Can made two kinds of dogs fight each other.'

b. ??Can *iki köpek tür-ü*-nü birbiri-yle dalaş-tır-dı.
Can two dog kind-COMP-ACC each.other-COM fight-CAUS-PST
Int.: 'Can made two dog kinds fight each other.'

The puzzle is this: The compatibility of (58a) with the object level verb *dalaş-* 'fight' suggests that *iki tür köpek* 'two kinds of dogs' takes the domain of object individuals. I have argued however that the function of kind words is to restrict the domain to kind individuals. Therefore, the ungrammaticality of (58b) is correctly predicted given the incompatibility of kind referring *iki köpek türü* 'two dog kinds' and object-level *dalaş-* 'fight'. How can, then, (58a) refer to object entities despite the presence of *tür* 'kind'?

Before formulating an answer, let me present more data that adds to the puzzle, and at the same time provides clues to a possible solution.

(59) a. Can *iki {farklı / melez} tür köpeğ*-i dalaş-tır-dı.
Can two different hybrid kind dog-ACC fight-CAUS-PST
'Can made two {different/hybrid} kinds of dogs fight.'

b. *Can *iki {büyük/kara} tür* köpeğ-i dalaş-tır-dı.
Can two dog black kind dog-ACC fight-CAUS-PST
Int.: 'Can made two {big/black} kinds of dogs fight.'

c. *{büyük/kara/farklı/melez} tane köpek
big black different hybrid CL dog
Int.: 'big/black/different/hybrid dogs'

(59c) demonstrates that adjectival modification is generally disallowed with classifiers, while (59a) shows that it is fine with kind terms. Apart from the puzzle that a functional head (the μ-head *tür* 'kind') is being adjectivally modified, the grammaticality contrast between (59a) and (59b) establishes that reference is made here to kind individuals. This is because *iki tür köpek* 'two kinds of dogs' accepts kind level modifiers like *different/hybrid*, but not object level ones like *big/black*. Thus, we are led to a contradiction: (58a) suggests that *iki tür köpek* 'two kinds of dogs' takes the object domain, (59a-b) suggest that it takes the kind domain. Note

that the problem is theory-independent; even if we revised our assumption that kind words target kind individuals, we would still be faced with this contradiction, since both examples contain a kind word.

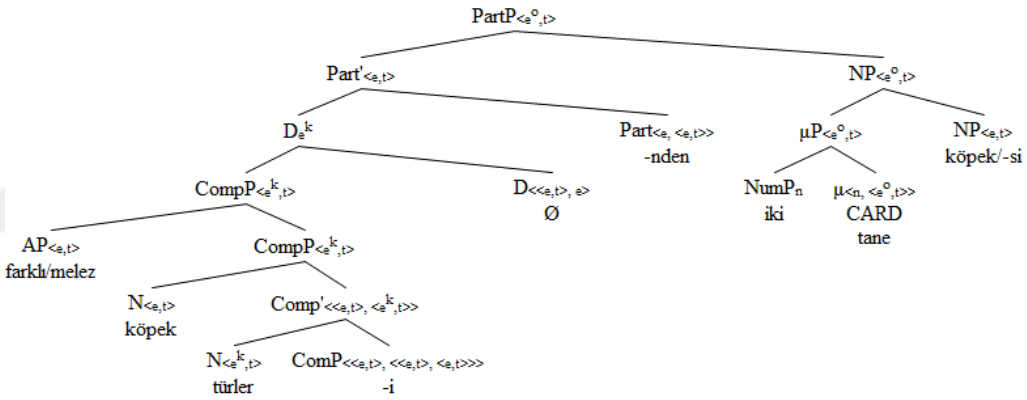
To see what actually happens, let us first observe that (59a) is semantically identical to (60a-b).

(60) a. Can *{farklı / melez} tür-den iki tane köpeğ*-i dalaş-tır-dı.
Can different hybrid kind-PART two CL dog-ACC fight-CAUS-PST

b. Can *{farklı / melez} köpek türleri-nden iki tanesi*-ni dalaş-tır-dı.
Can different hybrid dog kinds-COMP-PART two CL-ACC fight-PST

Both: 'Can made two dogs of different/hybrid kinds fight.'

c. Structure[44]



This means that *iki tür köpek* 'two kinds of dogs' under the object reference constitutes an example of partitive MCLCs discussed in Section 4.5.1. If so, we can still hold the assumption that the downstairs kind word restricts the domain to kind entities, and that the object reading is derived by the upstairs classifier *tane*. This means that *iki* 'two' in (58a) and (59a) does not actually combine with the kind word *tür* 'kind', but rather a covert classifier that references object entities as in (60c).

[44] The possessive suffix *–(s)I* can act as a pronominal form in Turkish (see Schroeder (2007) and von Heusinger and Kornfilt (2017)).

Further, kind level modifiers *farklı/melez* 'different/hybrid' in (59a) do in fact modify the compound head *tür* 'kind'.

I thus, conclude that these kind-word constructions share the same semantics with canonical partitive MCLCs, though I hesitate to say that the same syntax. The process in these constructions is not one of restriction per se, but one of instantiation, i.e. *köpek* 'dog' in these examples refers to object individuals not through the restricting of the domain object individuals, but by 'instantiating' a specimen of the dog kind. I leave the exact formulation of how this happens, and in particular how the surface order is derived, for a future work.

4.8 Summary

This chapter addressed the syntactic constituency of classifier and measure constructions and the way their semantics is derived. Section 4.2 introduced classifiers and measure words that have lexical as well as functional uses, demonstrating that they are usual words of type <e,t> in their lexical form. Functional ones, on the other hand, were shown to be transitive expressions of type <n, <e,t>> that need a numeral to be saturated. It was shown in particular that even the general classifier *tane* has a lexical form meaning *grain*. Based on Grimm's (2012a; 2012b) account of crosslinguistic lexicalization patterns, it was argued that the role of lexical classifiers like *tane* 'grain' is to spell out perceivable atoms in the denotation of granular aggregates like *kum* 'sand', which refer cumulatively.

After laying down some assumptions concerning numerals, measure phrases, and cardinality in Section 4.3, I moved onto the syntactic constituency and associated semantics of classifier and measure constructions in Section 4.4. Here, I first introduced the μP, arguing that it measures the entity denoted by the noun in varying

ways. It was also argued, based on Scontras (2014), that cardinality is a possible value of μ° alongside mass, volume, length, among others. Contra split analyses of classifier and measure constructions (see Section 2.4.2), this view of μP was shown to account for many properties of classifier and measure phrases, including the observation that they are mutually exclusive. In this model, classifiers spell out the CARD feature of μ° beside restricting the domain of the bare noun to object individuals. The model thus emerges was also shown to accommodate counting/measuring ambiguity of measure constructions involving a container classifier discussed in Section 2.3.3. The section was closed with counterarguments against Zhang's (2011a) claim that some classifiers may be syntactic place holders with no associated function. I argued, however, that in these classifier doubling cases, the downstairs classifier is a noun of type <e,t> in the head position of a compound, while the upstairs one is a regular classifier of type <n, <e,t>> which ordinarily serves to restrict the domain of the compound to object entities.

Section 4.5 shifted attention to multiple classifier constructions that come in two types: partitive MCLCs and attributive MCLCs. The discussion concluded that there is no room for undesired stacking of classifier/measure/kind constructions, and that the proposed mechanism is powerful enough to explain the properties of these constructions. Ungrammatical partitive classifier constructions were shown to either violate the monotonicity condition (Schwarzschild, 2002), or lack a numeral that μ° requires. Attributive MCLCs, on the other hand, must be distributive. Thus, violations of distributivity were shown to result in ungrammatical attributive MCLCs.

Section 4.6 addressed the status of [CL/M-NP] constructions which unpredictably lack a numeral. However, their compatibility with another classifier

and their resistance to insertion of *bir* 'one' between the classifier and the noun led me to conclude that [CL/M + N] phrases are not classifier or measure phrases but rather N-N compounds that lack the compound marker *–(s)I*.

In the final section of this chapter, I turned to some 'kind' word constructions. We have seen, quite puzzlingly, that while their occurrence with object level verbs suggests that these denote in the object domain, adjectival modification of the kind word strongly points to the conclusion that they denote in the kind domain. I proposed that these constructions exemplify not the canonical process of domain restriction but one of instantiation whereby the construction denotes a specimen belonging to the kind. Thus, they receive an interpretation similar to that of a partitive phrase.

CHAPTER 5

NUMBER MARKING

5.1 Introduction

In the face of the observation that a sizable number of classifier languages do not allow number markers on bare nouns in the presence of a numeral, the issue of number marking in classifier constructions has given rise to a number of theories that are specifically designed to capture this distribution (see Section 2.5). This chapter addresses the problem of number marking in Turkish classifier constructions, and proposes that, contra Chierchia (1998a; 1998b) and Borer (2005), among others, number markers do not stand in a paradigmatic relation with classifiers or measure words. The gist of the proposal is that Turkish nominals can minimally be split into two major camps: those that only project up to a μP, and those that project all the way up to DP, which may or may not contain the μP. It will be demonstrated that number marking is only relevant for DPs in Turkish, and that all sub-DP nominals lack specification of number understood as a sum-forming function.

The chapter is organized as follows. In Section 5.2, I lay down some of the assumptions regarding morphosyntax and semantics of Number. The basic arguments will be that morphological marking of number does not necessarily align with semantic Number; that, despite claims to the contrary (Bošković & Şener, 2014; Öztürk, 2005), some Turkish nominals do project to a DP; and that Number markers reside in a φP which takes the DP as a complement. I will also propose and elaborate on the Number Neutrality Condition (NNC) according to which the μP can only compose with number-neutral bare nouns.

Sections 5.3 and 5.4 discuss the expression of Number in the two major camps of nominals: sub-DP nominals like NPs and µP versus DP-nominals like referentials and strong quantifiers. Based on their distribution with respect to the tests in (1), I will propose the syntax and semantics in (2) for these two groups of nominals in Turkish. Strong quantifiers will be addressed in Section 5.4.4.

(1) Test for DPs vs non-DPs

A. Existential / existentially closed constructions
Non-DPs can appear in these constructions, DPs cannot.

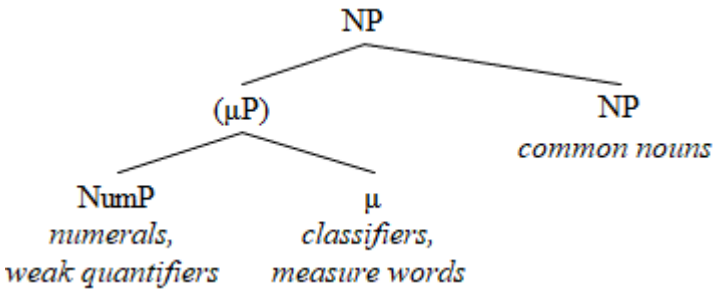
B. Canonical Subject position
These can host DPs but not non-DPs.

C. Number Agreement
This is only possible with DPs, not with non-DPs.

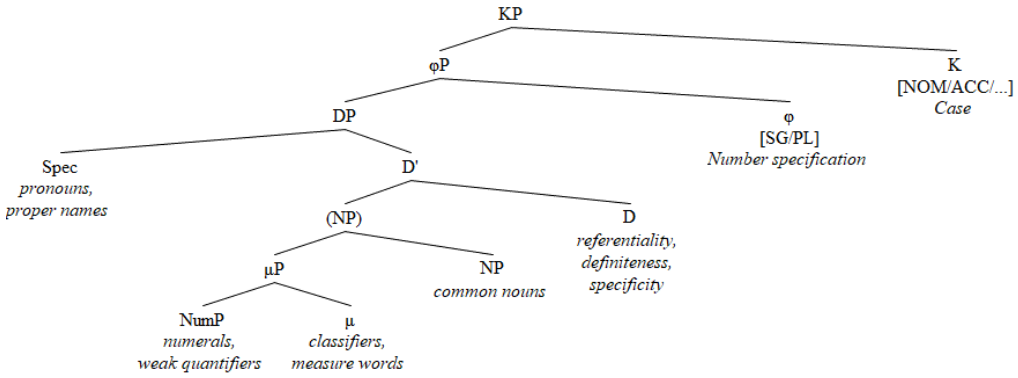
D. Overt structural Case
This is also only possible with DPs, not with non-DPs.

E. Scope
Only strong quantifiers, which take a DP complement (see Section 5.4.4), can have wide scope w.r.t. other operators; non-DPs always take narrow scope.

(2) a. Structure of non-DPs



b. Structure of DPs



The distributional properties given above will be shown to follow from (2), i.e. the proposal that non-DPs (NPs and μPs) lack the number-related projection of φP, while all DPs (referentials and strong quantifiers) must have it.

In Section 5.5, I address some issues that have the potential to challenge the account presented here, demonstrating that they can be explained by reference to well established facts without complicating the model. I first demonstrate in Section 5.5.1 that plural markers do not induce a definiteness effect; rather, they signal the presence of a DP layer, which may or may not be definite. Next, I present evidence in Section 5.5.2 that justify my rejection of CL/M-Number complementarity. Then I demonstrate in Section 5.5.3 that not all plural markers are examples of canonical sum-forming operations. Such non-sum-forming pluralization processes minimally include plural of types, plural of abundance, and plural of events, aka pluractionality. Section 5.5.4 addresses the unpredicted presence of *bazı* 'some' in existential constructions, concluding that it has two forms: one as a strong quantifier, another as a weak one. It is this weak *bazı* meaning 'a few' that emerges in existential constructions. Section 5.5.5 turns to a set of quantity denoting words that, when subjected to the tests in (1), pattern neither with strong quantifiers nor with weak ones. It will be concluded that these are neither strong nor weak quantifiers but degree modifiers. Finally, Section 5.5.6 will establish that the negative existential *yok*

in definite constructions is actually a negation element stripped off its existential semantics.

5.2 Background assumptions

In this section, I spell out some of the assumptions I make with respect to the syntax and semantics of Number specification.

5.2.1 Syntax – semantics mismatch

Despite appearances, the morphological marking of number does not always align with semantically interpreted Number. To the best of my knowledge, morphological plural markers have not so far been observed to receive exclusively singular interpretation, or vice versa. The misalignment of morphological vs semantic Number is typically the case when one morphological form spells out two functions: singular/plural and number-neutral. Pereltsvaig (2011) argues that number morphology does not always express a corresponding number feature, and presents examples from languages like English, Russian, Norwegian, and Eastern Armenian demonstrating the ubiquity of inclusive (i.e. number-neutral) singulars and plurals. Bale, Gagnon and Khanjian (2011b) take this position one step further, maintaining that a negative correlation between morphological vs semantic markedness in Number specification is more appealing on theoretical as well as empirical grounds if number markers can also be interpreted as augmenting functions (alongside their usual restricting functions).

Recall the arguments from Section 2 that English PL-marked nominals receive number-neutral interpretations in downward entailing contexts. Turkish number-neutrals, on the other hand, are morphologically identical with the singular.

Arabic, however, despite patterning with English in syncretizing plural and number-neutral forms of native words, has a group of loan words with three forms corresponding to singular, plural, and number-neutral. Thus, we have the crosslinguistic distribution in Table 16 regarding the morphosyntax and semantics of Number marking.

Table 16. Crosslinguistic Number Syncretism

<table>
<tr><th>Language</th><th>SG</th><th>Number-Neutral</th><th>PL</th></tr>
<tr><td>English</td><td>-Ø
orange</td><td colspan="2">-s
oranges</td></tr>
<tr><td>Turkish</td><td colspan="2">-Ø
portakal
‘orange’</td><td>-lAr
portakallar
‘oranges’</td></tr>
<tr><td rowspan="2">Arabic</td><td>tifl
‘child’</td><td colspan="2">ʔaṭfaal
‘children’</td></tr>
<tr><td>burtogaal
‘orange’</td><td>burtogaala(h)
‘oranges’</td><td>burtogaalat
‘oranges’</td></tr>
</table>

Syntax-semantics mismatch of Number marking extends well beyond this simple syncretism. In Turkish, for instance, semantically plural nominals sometimes fail to trigger syntactic plural agreement on the verbal predicate.

(3) Bugün ders-e sadece *üç* *öğrenci* gel-di(*-ler).
today class-DAT only three student come-PST-3PL
‘Only three students came*PL to class today.’

In this sentence, *üç öğrenci* ‘three students’, despite being semantically plural, cannot control agreement as it lacks morphosyntactic number. This leads to the conclusion that number marking (SG/PL) is a structural issue in Turkish, restricted to DPs. All non-DP projections lack morphosyntactic expression of number, and thus necessarily receive a number-neutral interpretation. DPs, on the other hand, project

to φP, which restricts the noun denotation to either singularities or pluralities.[45] This conclusion is supported by a number of facts.

First, bare nouns are already number-neutral, meaning that singular/plural reference can be achieved without overt expression of number.

(4) a. Can *şiir* oku-ma-z. (object position)
Can poem read-NEG-PRS
'Can does not read {a poem / poems}.'

b. *Kardeş*-in var mı? (possessive existential)
sibling-2SG.POSS exist QUES
'Do you have {a brother / brothers}?'

c. Ben {onu / onları} *mühendis* san-ıyor-du-m. (predicate position)
I him them engineer think-IMPF-PST-1SG
'I considered {him an engineer / them engineers}.'

Next, quite tellingly, these constructions reject singular or plural markers.

(5) a. *Can {*bi* şiir / şiir-*ler*} oku-ma-z. (object position)
Can a poem / poems read-NEG-PSR
'Can does not read {a poem / poems}.'

b. *{*Bi* kardeş-in / kardeş-*ler*-in} var mı? (possessive existential)
a sibling-3POSS / sibling-PL-3POSS exist QUES
'Do you have {a brother / brothers}?'

c. *Onları {*bir* mühendis / mühendis-*ler*[46]} san-dı-m. (predicate position)
them an engineer-PL engineer-PL think-PST-1SG
'I considered them engineers.'

Finally, number markers are disallowed in derivational contexts altogether.

(6) ant(*-s)-invaded house

[45] This is in line with Partee's (2010) strong hypothesis that all modification, including number modification, is restrictive.

[46] This sentence can be grammatical if *-lAr* on *mühendis* 'engineer' is interpreted not as a plural marker but as a third person plural agreement marker.

The verb *invaded* semantically requires *ant* to be plural, as no single ant can invade a house alone. The fact that it lacks, even resists, the plural marker provides conclusive evidence that semantic plurality does not always come with plural markers. A number-neutral form suffices to do the job just as well.

5.2.2 DP hypothesis

Bošković and Şener (2014) argue that Turkish lacks the DP projection. Following Osawa (1998), Öztürk (2005), in contrast, proposes that the role of DP is fulfilled by Case. Based on the correlation between case markers and articles (i.e. the observation that the rise of the article system follows the deterioration of case system), Osawa's (1998) proposes that the R(eferential)-role of NPs is bound by Articles in DP languages and by Case in NP languages.

I assume with Abney (1987), Stowell (1991), Szabolci (1994), and Longobardi (1994) that referential arguments project to a DP. I also follow Arslan-Kechriotis (2009) in assuming that the two conditions for argumenthood are encoded in different loci in Turkish: referentiality in D, Case in K. Slightly modifying Öztürk's (2005) analysis, I propose, following Ketrez (2004), that overt structural case markers do not actually encode referentiality, but they merely hint at the presence of a DP layer. In what follows, I provide some additional arguments in favor of a DP analysis for Turkish nominals.

Theoretical elegance:

In line with the Uniformity Principle (Chomsky, 2001a), the null assumption is that referentiality is associated with the DP layer crosslinguistically.

Number:

Referential nouns cannot be number-neutral in Turkish. When not PL-marked, they only receive a singular interpretation. On the surface, however, the singular/number-neutral distinction is blurred as singular is phonologically null (-Ø), and surfaces as string-identical to number-neutral.

(7) a. Can *kitap* oku-du. (non-DPs)
Can book read-PST
'Can read {a book / books}.'

b. Can-ı *polis* kovala-mış.
Can-ACC policeperson chase-PST
'{A policeperson / Policepersons} chased Can.'

c. Can *kitab-Ø*(-ı)* oku-du. (DPs)
Can book-SG-ACC read-PST
'Can read the {book / *books}.'

d. *Polis-Ø*(-Ø)* Can-ı kovala-mış
policeperson-SG-NOM Can-ACC chase-PST
'The {policeperson / *policepersons} chased Can.'

Case:

Referential nouns cannot appear caseless (see (7c-d)). This is predicted assuming the close connection between case and referentiality in Turkish (Kornfilt, 1984; Sezer, 1991; Enç, 1991; Kelepir, 2001; Öztürk, 2005). Crosslinguistically, case and number markers have been observed to interact with D elements, as in German determiners (*der* 'the.SG.NOM', *den* 'the.SG.ACC', *dem* 'the.SG.DAT', *die* 'the.PL.NOM').

Referentials:

These are common in putatively NP languages. Under the no-DP analysis, such referential *e*-type nominals would have to parsed as NPs, which blurs their sharp contrast to <e,t>-type predicative nouns.[47]

[47] Öztürk (2005, p. 84) notes some examples of pronouns being used as NPs.

Demonstratives:

These, too, are common in all languages. The categorial status of demonstratives is controversial though. Taboada (2007) lists several properties mentioned in Roca (1996) that are common to both determiners and demonstratives; while Bernstein (1997) points to similarities between demonstratives and adjectives. Yet, the general consensus in the literature is that demonstratives and determiners do not merge in the same slot. Some argue that demonstratives merge lower than DP (Giusti, 1994), while others maintain that they merge higher than the DP (Windsor, 2014; Lewis, 2014). There is a third group arguing that definiteness, particularly in the case of demonstratives, is encoded in two different locations and achieved as a result of their interaction (Szabolci, 1994; Hoekstra & Hyams, 1996; Brugè, 2002; Sio, 2008). These have in common the idea that an uninterpretable definiteness/referentiality feature/variable is hosted in a projection above the NP, which is checked/bound by the interpretable one in [Spec, DP]: $[_{DP}\ OP_i\ D\ [_{AP}\ A]\ [_{XP}\ X_{i(variable/feature)}]\ [_{NP}\ N]]$.

The discussion revolves around the observation that in some languages, demonstratives and determiners can co-occur. In Romanian, demonstratives can co-occur with the definite article if the noun is located to the left of the demonstrative (8a); in Spanish, they can co-occur unless both are prenominal (8b); while in English they never co-occur (8c).

(i) Ben artık o eski *ben* değil-im.
I no.longer that old I NEG-1SG.PRS
'I am no longer that old me.'

I believe such examples can also be found in well-established DP languages. These have peculiar interpretations like *I am no longer {what / the person} I used to be*, and can possibly be accounted for by reference to Partee's (1987) type shifting mechanisms. As such, these do not weaken the argument that, categorically speaking, pronouns are referential D elements.

(8) a. băiat-ul *acest* frumos / *acest* (frumos) băiat (frumos)
boy-the this nice this nice boy nice
Both: 'this nice boy.'

b. el libro *este* / *este* libro / *{el *este* / este el} libro
the book this this book the this this the book
All: 'this book'

c. {**this* the / the *this*} book

Those who argue for a DP internal merge of demonstratives claim that they raise to [Spec, DP], while those that argue for a DP external account of demonstratives claim that the NP moves to a DP internal Topic position proposed in Giusti (1996).

Taking demonstratives as D elements squares nicely with Greenberg's (1978) observation that determiners derive from demonstratives diachronically. In fact, in many languages, demonstratives are also synchronically used as determiners stripped off their deictic function.

Back to Turkish, citing examples like (9), Öztürk (2005) entertains the hypothesis that Turkish demonstratives[48] are adjectival in nature. The upshot of these examples is that the demonstrative *bu* 'this' does not close off the projection (9a), which would be expected if it were a truly D element; and that it can be freely ordered with respect to other adjectives (9b-c).

(9) a. John'un *bu* kitab-ı
John-GEN this book-POSS
'this book of John's'

b. *bu* kırmızı kitap
this red book
'this red book'

c. kırmızı *bu* kitap
red this book
'this red book'

[48] Öztürk (2005) goes on to claim that numerals are adjectival, too. However, while adjectives can act as predicates in Turkish, numerals cannot, unless accompanied by a classifier. Further, I demonstrated that numerals and adjectives belong to different semantic types, n and <e,t> respectively.

I believe the evidence is not conclusive. For one thing, (9c) is only grammatical under a non-restrictive reading, meaning that *kırmızı* 'red' is contained in a reduced High-RC (see below) merged in [Spec, DP].

Second, adjectives can also be freely ordered with respect to numerals, though they belong to different semantic classes.

(10) a. iki *kırmızı* kitap
two red book

b. *kırmızı* iki kitap
red two book

If such reordering suggests anything at all, it is the conclusion that they should not be taken as evidence when establishing the categorial status of constituents.

Further, as Bošković and Şener (2014) note, demonstratives can also be freely order with respect to possessors alongside adjectives.

(11) a. Can'-ın *şu* (eski) üç (eski) bisiklet-i[49]
Can-GEN that old three old bicycle-3SG.POSS
'those three old bicycles of Can's'

b. *Şu* Can'-ın (eski) üç (eski) bisiklet-i
that Can-GEN old three old bicycle-3SG.POSS
'those three old bicycles of Can's'
(Bošković & Şener, 2014, pp. 111-112)

If possessors are assumed to occupy [Spec, DP], then (11b) is a puzzle for the demonstrative-as-adjective analysis because the purportedly adjective *şu* 'that' is ordered to the left of a [Spec, DP]-occupying possessor *Can'ın* 'Can's'.

[49] Balkız Öztürk-Başaran (p.c., June 8, 2019) notes that such examples cannot actually be formed with true deictic demonstratives like *bu* 'this' and *o* 'that'. In fact, *şu* in this example is a discourse-level demonstrative meaning *recall that*.

Thus, based on the grammaticality of examples like (11b), I assume standardly that both possessors and demonstratives target the DP. Accordingly, (9a) ceases to be a problem.[50] In the upcoming sections of this chapter, I will demonstrate that demonstratives pattern with the canonical D elements like proper nouns and pronouns with respect to all the tests introduced in (1).

Extraposition:

Referential nominals in Turkish do not allow extraposition of µP, which is normally possible with non-DPs.

(12) a. Non-DPs
Oda-m-a (üç tane) öğrenci gel-di (üç tane).
room-1SG.POSS-DAT three CL student come-PST three CL
'Three students came to my room.'

[50] It is probably the case that constructions involving a possessor and a demonstrative are covert partitives. This is because DPs are known to have strong existence presupposition, which incorrectly leads to the interpretation that *John only has this (single) book*. But if *bu* 'this' is a DP taking *John'un kitabı* 'John's book' as a complement, we correctly evade the presupposition that John has a single book. I conclude thus that the demonstrative must raise at LF. See Lewis (2014) for a similar analysis.

(i) PF: [$_{DP}$ John'un bu kitabı]] LF: [$_{DP}$ bu$_i$ [$_{DP}$ John'un t$_i$ kitabı]]

An alternative analysis based on DP internal Topic analysis is given in (ii).

(ii) [$_{TopP}$ John'un$_i$ [$_{DemP}$ bu [$_{DP}$ t$_i$ kitabı]]]

This set of data is reminiscent of cases involving a possessor and a numeral which lack the predicted existence presupposition.

(iii) Can'ın iki kitabı 'two books of Can's'

This sentence can mean that *Can has more than two books*. Bošković and Şener (2014) argue that the non-presuppositional reading arises due to LF movement of the numeral, leading to a covert partitive.

(iv) [iki$_i$ [$_{DP}$ Can'ın t$_i$ kitabı]]

Given the difficulty in motivating the movement of the numeral *iki* 'two' in (iv), I believe that a DP internal Topic movement is a better explanation. Similar to (ii), the proper noun *Can* overtly moves to the Topic as in (v), ending up to the left of the numeral. I will not pursue the issue any further, hoping that future research will shed more light on that controversy.

(v) [$_{TopP}$ Can'ın$_i$ [$_{µP}$ iki [$_{DP}$ t$_i$ kitabı]]]

b. DPs
(Üç tane) öğrenci oda-m-a gel-di (*üç tane).
three CL student room-1SG.POSS-DAT come-PST three CL
'The three students came to my room.'

Under the NP analysis, such a contrast would be very difficult, if not impossible, to explain. Under the DP analysis, however, it suffices to say that the DP does not allow sub-extraction of part of its complement. If so, extraction of the µP [$_{µP}$ *üç tane*] 'three' from the DP [$_{DP}$ [$_{µP}$ *üç tane* [$_{NP}$ *öğrenci*]] *Ø*] 'the three students' leads to ungrammaticality.

Low/high RCs:

Note the grammaticality contrast induced by overt case marking between (13a-a') and (13b-b').

(13) a. Can İngilizce yaz-ıl-mış *makale* oku-du.
Can English write-PASS-PST article read-PST
'Can read articles that are written in English.'

a'. Can öt-en *kuş* iste-me-z.
Can chirp-REL bird want-NEG-PRS
'Can does not want birds that chirp.'

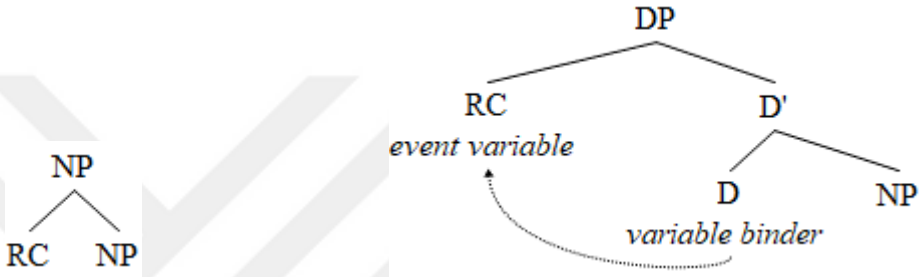
b. Can ben-im yaz-dığ-ım *makale**(-yi)* oku-du.
Can I-GEN write-NOML-1SG.POSS article-ACC read-PST
'Can read the article that I wrote.'

b'. Can sen-in al-dığ-ın *kuş**(-u)* iste-me-z.
Can you-GEN buy-NOML-2SG.POSS bird-ACC want-NEG-PRS
'Can does not want the bird that you bought.'

It has been suggested that some relative clauses attach to the NP (called *Low RCs*), while others attach to the DP (called *High RCs*). Presumably, this distinction depends on the type of the predicate: individual level predicates (like *öt-* 'chirp') favor low RCs, stage level predicates (like *al-* 'buy') favor high RCs, and not-so-

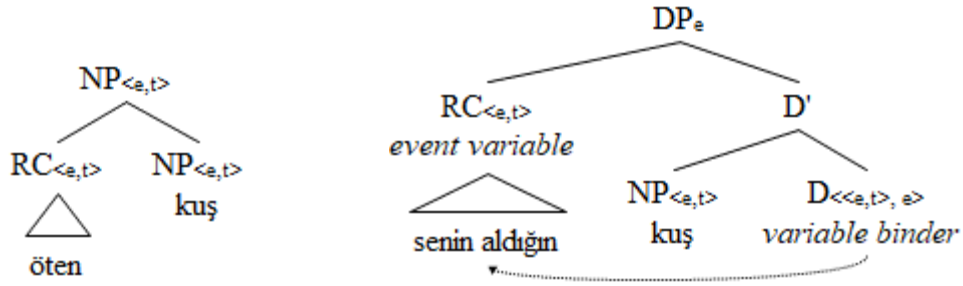
strict predicates (like *yaz-* 'write') allow both. Stage-level (episodic) predicates are argued to provide an event variable which is bound by D under Spec-Head configuration; while no such variable is introduced by individual-level predicates.[51] This is reminiscent of locative modifiers like *şuradaki kalem* '{the/*a} pen over there' which automatically induce referentiality due to the location variable they provide, which is arguably bound by the operator in [Spec, DP].

(14) a. Low RCs b. High RCs



Under the DP analysis, (13a') and (13b') would be associated with (15a) and (15b) respectively.

(15) a. Low RCs b. High RCs[52, 53]



[51] See Lin (2008) on the superiority effects of stage- vs individual-level predicates in RCs.

[52] High RC-containing DPs can also be quantificational, in which case they would be associated with <<e,t>, <<e,t>, t>> type.

(i) [RC Can sen-in al-dığ-ın] her kuş*(-u) iste-me-z.
Can you-GEN buy-NOML-2SG.POSS every bird-ACC want-NEG-PRS
'Can does not want every bird that you buy.'

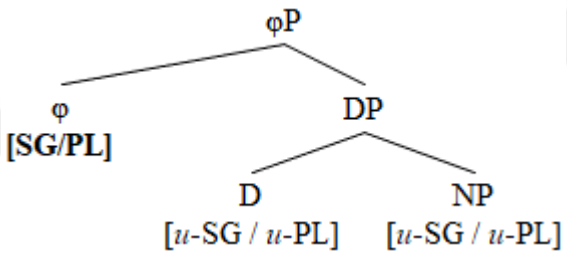
[53] A similar proposal is made in Sio (2008) based on the observation that Mandarin Chinese does not allow (i.b) in which a marker modifier occurs to the left of [Numeral-CL-NP] sequence.

The obligatorily overt case marking requirement in (13b-b') is correctly predicted under the DP account. If the nominal containing the high RC must be a DP, and if DPs must bear overt case markers in Turkish, they cannot appear caseless. Under the non-DP account, however, this set of data would be a tough challenge.

5.2.3 The φP

I also assume with Sauerland (2003) and Sauerland and Yatsushiro (2005) that Number is never directly interpreted on NPs. The only semantically relevant number markers are located in φP that takes a DP complement as in (16) (see Section 2.5.2).

(16) The φP[54]



In this model, number markers on bare nouns in English type languages arise as a result of agreement with the number features of φP (but see next section). φ

(i) a. yǒu [sān běn zhāngsān de shū] zài zhèr
have three CL Zhangsan GEN book at here
'There are three books of Zhangsan's here.'

b. *yǒu [zhāngsān de sān běn shū] zài zhèr
have Zhangsan GEN three CL book at here
'There are three books of Zhangsan's here.'

Sio argues that (i.b) can only receive a specific reading, and is thus incompatible with existential sentences. In this analysis, the sequence *Zhangsan de* 'Zhangsan's', though not triggering specificity itself, probably raises to the specifier position of Sio's Specificity Phrase, comparable to our [Spec, DP] analysis of High RCs.

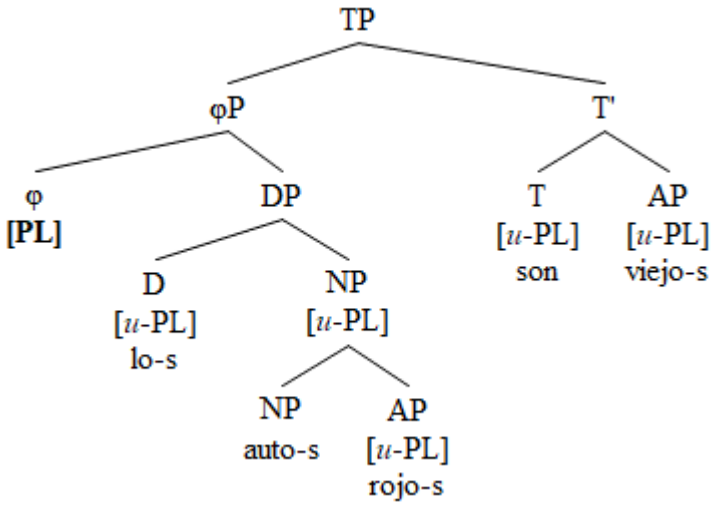
[54] Aboh (1998) makes a similar proposal for the nominals of Gungbe, a Niger-Congo language spoken in West Africa, but puts number markers between the DP and the DemP: [$_{DP}$ [$_{NumP}$ [$_{DemP}$ [$_{Numerals}$ [$_{Adj}$ [$_{NP}$]]]]]].

itself is an identity function serving to check whether its complement meets certain conditions (i.e. whether the DP has the correct person, number, and gender features). It thus acts as a licensor of non-interpretable φ-features in the nominal domain.

This view of Number immediately explains several significant properties of number markers. First, given that agreement does not have any semantic force, we would actually predict the existence of languages that require number agreement (like English), those that optionally allow it (like Western Armenian), and those that disallow it totally (like Turkish). Crucially, though, the DPs of all languages obligatorily project to φP where interpretable number features reside.

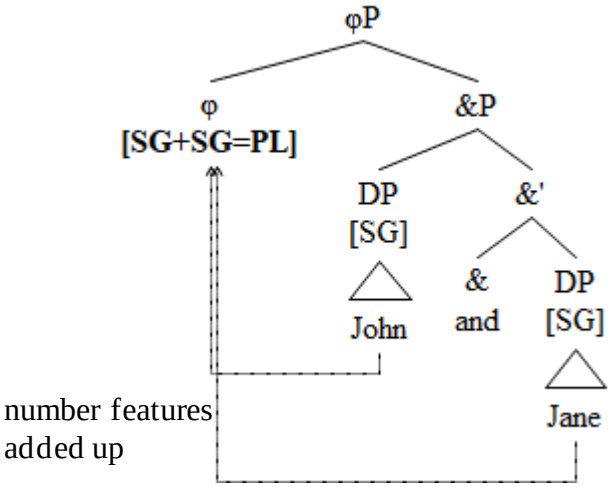
Second, number features are thus located in a position where they can control the number features of their nominal complements (nouns and their adjective modifiers) as well as those of the clausal elements in T.

(17) [$_{DP}$ Lo-s [$_{NP}$ auto-s [$_{AP}$ rojo-s]]] [$_{TP}$ {*es/son} viejo-s]. (Spanish)
the-PL car-PL red-PL is are old-PL
'The red cars *is/are old.'



Third, as Sauerland (2003) argues, we have an explanation as to how the plural feature arises out of two singular conjuncts.

(18) John and Jane *is/are at work.



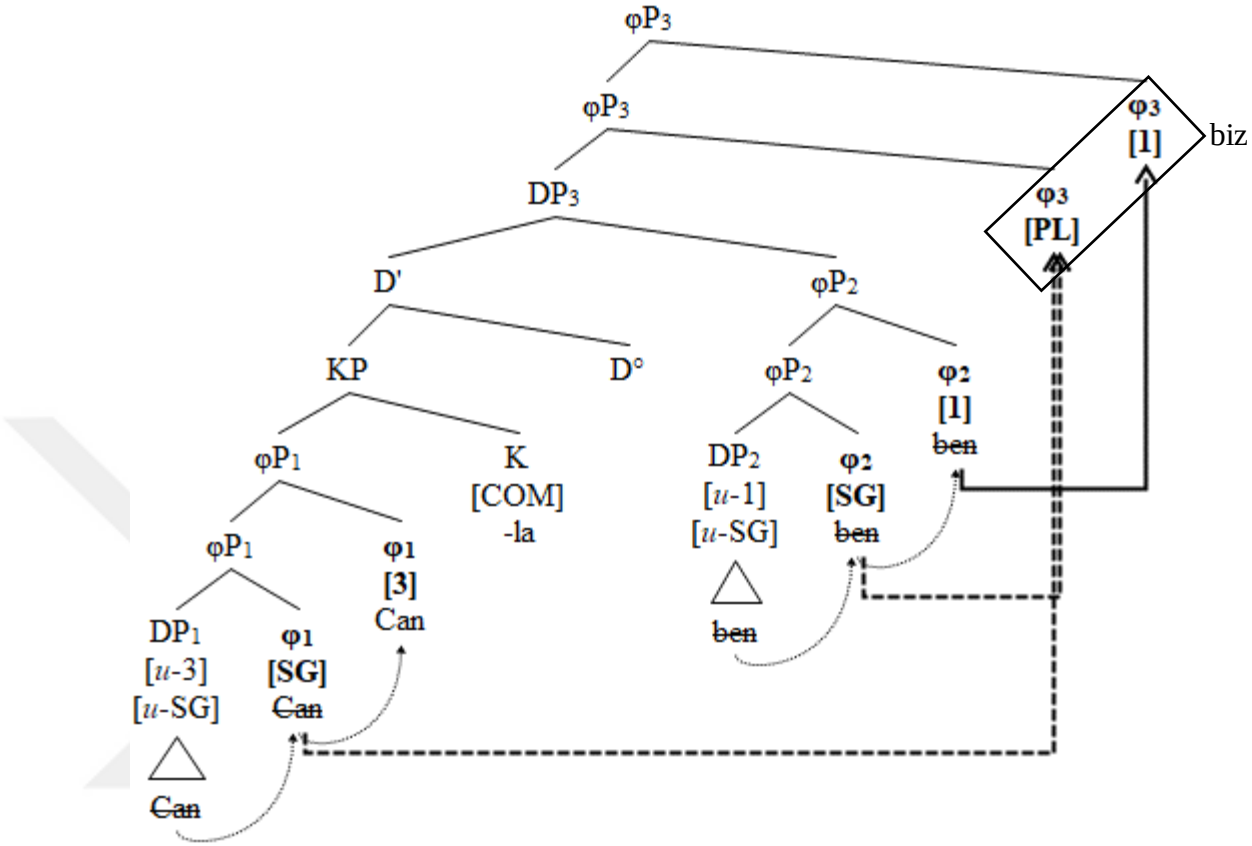
Further, attempts have already been made to move the locus of number markers away from the NP, and as far as above QP (Scontras, 2014), below DP (Ritter, 1992), and any adjoined position in the nominal projection (Wiltschko, 2008; Butler, 2011; Butler, 2012a; Butler, 2013)).

Finally, I demonstrate in Chapter 6 that Sauerland's (2003) model best accounts for a number of puzzling facts about Inclusively Used Plural Pronoun Constructions (IPPCs) in which a plural pronoun can surprisingly receive a singular interpretation.

The gist of the proposal is that the plural feature of a plural pronoun in an IPPC is a feature of the coordinated DP (termed DP_3), not of the inclusively used plural pronoun (DP_2) per se. The IPPC is derived when the person feature of the singular pronoun raises from φP_2 to φP_3, where it spells out the plural feature of φ_3. Crucially, this is only possible under the DP analysis of Abney (1987) and the φP analysis of Sauerland (2003).

(19) IPPC

[Can-'la *biz*] iyi anlaş-ıyor-uz.
Can-COM we well get along-PRS-1PL
'[Can and I] get along well.'



Thus, Sauerland's (2003) account of Number captures a fairly wide range of properties of number marking. I will demonstrate in the remaining parts of this chapter that this model is very fruitful in accounting for the major split in number marking between NPs/μPs and DPs.

5.2.4 The Number-Neutrality Condition

Recall Sauerland's (2003) proposal that, in a phrase like *three student*(-s)*, the plural marker on *students* is an agreement reflex that emerges due to the plural feature of the φ. I have argued however that a [Numeral + BNP] construction only projects up to μP, lacking the DP layer. In the absence of a DP, the plural marker cannot be an

instance of agreement, as there simply is no φP. If such plural markers do not mark agreement, what are they for?

I propose that in languages like English, morphological plural markers on bare nouns in the context of a numeral greater than *one* is actually a marker of number-neutrality. To capture this, I propose the Number Neutrality Condition (NNC).

(20) Number Neutrality Condition (NNC)
μP exclusively combines with number-neutral bare nouns, not bare singulars or bare plurals.

NNC is appealing on theoretical and empirical grounds for several reasons.

Optimality:

μ° is the locus of classifiers and measure words, and [Spec, μP] of numerals. Overall μP measures the noun along various dimensions. Given that numerals range from whole numbers (*one, thirty-seven,* etc.) to fractions (*0.2, 3/4* etc.), a number-neutral bare noun is the optimal solution to meet the requirement of μP since some of these numerals target objects whose cardinality is below *one*. Indeed, English requires the presence of a bare plural even with quantifiers like *zero*/*no* and fractions.

(21) a. 0.5 apple*(-s)

b. zero/no apple*(-s)

Considering that *0.5*, *zero,* and *no* do not denote plurals semantically, the obligatory presence of the plural marker in such cases strongly suggests that it marks number-neutrality, not plurality of the bare noun or agreement with some other feature.

Economy:

Being structurally simpler, number-neutral forms are expected to block structurally more complex number-marked forms. Indeed, even in number-marking languages like English, it is not the case that *one* goes with the singular and other numerals go with the plural. Rather, the correct observation seems to be that *one* (and only *one*) selects the singular while all other numerals select the plural, which I have argued to be the spell out for number-neutral forms. In other words, the numeral *one*, which carries with it a strong atomicity presupposition (Krifka, 1989), is an exception.

Morphology:

In Arabic, there apparently is singular/dual/plural agreement with numerals up to ten; but after that, singular is used.[55] Likewise, Zhang (2011a) states that in Finnish, nouns must carry singular markers in the presence of numerals (22a). If a demonstrative is also present, however, the demonstrative has to be plural (22b).

(22) a. Kolme auto-a aja-a tiellä. (Finnish)
three car-part.SG drive-SG road
'Three cars drive on the road.'

b. Ne kaksi pien-tä auto-a seiso-ivat tiellä.
those.PL two.SG small-part.SG car-part.SG stand-PST.3PL road.ADES
'Those two small cars stood at the road.'

(Zhang, 2011a, p. 122)

Such idiosyncratic number-marking would be a puzzle if it were semantically interpreted, and should therefore be explained by assuming that they are somehow selected by varying values of μ. I have as yet no explanation as to why this happens, but such varied number marking lends strong support to the argument that nouns

[55] I suspect the issue is more complicated. In particular, whether the NP complement of numerals greater than ten is truly singular or number-neutral should be checked.

combining with the µP must be semantically number-neutral, whatever its morphological form may be.

5.3 Number with non-DPs

This section addresses the syntactic structure and semantics interpretation of Number in Turkish non-DP nominals. These minimally include BNPs and µPs. It is argued that both of them lack the number-related projection of φP. This is then demonstrated to account for their properties laid out at the beginning of this chapter, i.e. that non-DPs can appear in existential and existentially closed constructions, cannot fill in canonical subject positions, lack number specification, lack overt structural case, and always take narrow scope with respect to other operators.

5.3.1 Bare nouns

Bare nouns of Turkish are <e,t>-type predicates, only projecting an NP in syntax.

(23) Structure of bare NPs

$NP_{<e,t>}$

Because bare nouns lack the DP layer, they also lack morphosyntactic expression of number (Schroeder, 1999; Kelepir, 2001), the locus of which is the φP above the DP. This line of reasoning accounts for a wide range of properties of bare NPs. They are allowed in existential (24a) and existentially closed (24b) constructions[56]; they only receive number-neutral interpretations (24c), they cannot trigger agreement (24d);

[56] I am assuming that locatives and datives mark the edge of the VP in Turkish. Thus, constituents to the left of them are mapped to Diesing's (1992) restrictive clause, whereas constituents to the right of them are mapped to nuclear scope.

they must appear caseless[57] (24e); they cannot fill canonical subject positions (24f), and are scopeless (24g).

(24) Distribution of bare NPs

a. Garaj-da *araba* var. (existential)
garage-LOC car exist
'There {is a car / are cars} in the garage.'

b. Can'a *araba* çarp-mış. (existentially closed)
Can-DAT car hit-PERF
'{A car has / Cars have} hit Can.'

c. Ev-e *hırsız* gir-miş. (number-neutrality)
house-DAT thief enter-PERF
'{A thief has / Thieves have} broken in the house.'

d. Ev-e *hırsız* gir-miş(*-ler). (agreement)[58]
house-DAT thief enter-PERF-3PL
'A thief / Thieves has / *have broken in the house.'

[57] Given the Case Filter (Chomsky, 1986), a question arises as to whether these nominals are truly caseless. A sizable literature establishes that they are not. De Hoop (1996) proposes that the morpho-syntactic case of an object directly correlates with its semantic interpretation. In her analysis, weak Case is lexical and assigned at D-structure. NPs bearing weak Case are existential expressions or predicate modifiers of type <<e,t>, <e,t>>. Weak Case is taken to lack referential power. Strong Case, on the other hand, is structural, assigned at S-structure, and acts as a type-shifter. NPs with strong Case are taken to be generalized quantifiers of type <<e,t>, t>. Van Geenhoven (1996) proposes that de Hoop's (1996) weak nominals are semantically incorporated as part of the verbal complex headed by an <<e,t>, <e,t>>-type predicate. Van Hout (2004) adds that only objects with strong Case move out of the VP, more specifically to [Spec, AgrOP] where strong structural Case is checked. Weak NPs, on the other hand, remain in VP, and get their Case checked in-situ.

Öztürk (2005) associates overt structural Case in Turkish with de Hoop's (1996) strong Case, and lack thereof with weak Case. Accordingly, non-referential nominals are predicted to lack overt Case. (i) demonstrates, however, that this prediction is too strong.

(i) *Araba-yı* hızlı değil güvenli kullanmak gerekir.
car-ACC fast not safe drive necessary
'{A car / Cars} one should drive not fast but safely.'

Here, *araba-yı* 'car-ACC' is a non-referential, number-neutral noun. The case marker presumably arises because it is moved away from verb for focus. Erguvanlı-Taylan (1984) observes that non-case marked nouns must occur in preverbal position, irrespective of what they denote. But it could also be the case that *araba* here denotes kind and is thus referential. A thorough analysis of case marking is beyond the confines of this study, but see von Heusinger and Kornfilt (2005) for details.

[58] Kornfilt (1997) and Göksel and Kerslake (2005) observe that verbal agreement can only be achieved with nouns denoting human referents.

e. Can *ev*(*-i) al-dı. (structural case)
Can house-ACC buy-PST
'Can bought {a house / houses / *the house(s)}.'

f. **Araba* garaj-da. (subject position)
car garage-LOC
'{*A car is / *Cars are} in the garage.'

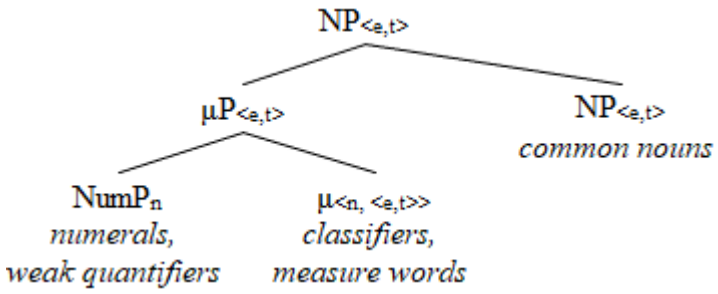
g. Herkes *araba* al-dı. (scope)
everyone car buy-PST
'Everyone bought {a car / cars}.' *everyone>car / *car>everyone*

Particularly interesting are (24c-g). If number specification, overt structural case, canonical subject position, and scope is only relevant for DPs, it follows that bare nouns show this distribution because they lack the DP layer.

5.3.2 Weak quantifiers

Weak quantifiers are actually cardinality-denoting numerals, of type *n*, and are associated with the µP just like numerals. µ° hosts classifiers and measure words while [Spec, µP] hosts numerals like *beş* 'five', as well as weak quantifiers like *birkaç* 'a few', *üçbeş* 'several', and *hiç* 'any'. This is in line with Milsark's (1977) argument that weak quantifiers are cardinality words rather than true quantifiers. The only difference between a weak quantifier and a cardinal is that the former denotes imprecise quantity. The structure of a µP is repeated in (25).

(25) Structure of µPs



Therefore, regarding their ability to co-occur with classifiers and measure words, weak quantifiers pattern with regular numerals rather than strong quantifiers.

(26) {*sekiz* / *birkaç* / *üçbeş* / **her* / **tüm* / **kimi* / **çoğu*} tane öğrenci
eight / a.few / several / *every / *all / *some / *most CL student

Lacking the DP layer, µPs parallel bare nouns in many respects. The only difference between them is that µPs can be semantically plural in the presence of a numeral greater than *one*, despite lacking morphosyntactic number. Semantic plurality, however, does not influence their syntactic distribution.

(27) Distribution of µPs

a. Garaj-da *üçbeş tane araba* var. (existential)
garage-LOC several CL car exist
'There are three cars in the garage.'

b. Can'a *birkaç tane araba* çarp-mış. (existentially closed)
Can-DAT a.few CL car hit-PST
'Two cars have hit Can.'

cf. ??*Birkaç tane araba* Can'a çarp-mış.[59]

c. Ev-e *birkaç tane hırsız* gir-miş(*-ler). (agreement)
house-DAT a.few CL thief enter-PST-3PL
'A few thieves has / *have broken in the house.'

d. Can *üçbeş tane ev(*-i)* al-mış.[60] (structural case)
Can several CL house-ACC buy-PST
'Can bought three houses.'

e. **Üçbeş tane araba* garaj-da.[61] (subject position)
several CL car garage-LOC
'Several cars are in the garage.'

f. Herkes *birkaç tane makale* oku-du. (scope)
everyone a.few CL article read-PST
'Everyone read a few articles.' ∀>*a few* / **a few*>∀

[59] This is grammatical under a specific reading, which I assume is a DP. See Section 5.4.3.

[60] When case-marked, this construction has either a specific or a partitive reading, presupposing the existence of a set of houses.

[61] Only grammatical with contrastive focus on *several cars*.

I conclude thus this section that both bare nouns and μPs lack DP and φP, hence only appearing in existential constructions with a number-neutral interpretation (27a-b), failing to trigger agreement (27c) and to occur in canonical subject positions (27e), and rejecting overt structural case (27d). In particular, they cannot take scope with respect to other operators (27f), establishing their non-DP status.

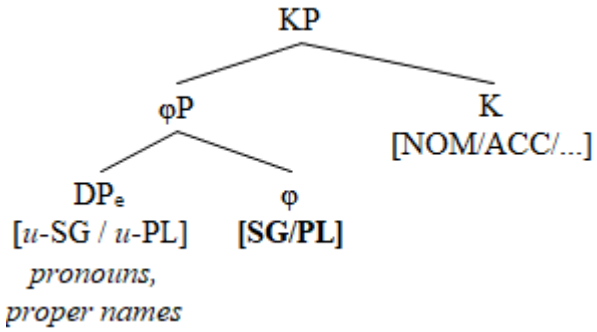
5.4 Number with DPs

This section addresses the syntactic structure and semantics interpretation of Number in Turkish DP-projecting nominals. These include referential nominals (like pronouns, proper nouns, and definite expressions) and strong quantifiers. It is argued that both of these project to a DP and φP and thus receive either a singular or a plural interpretation. Number-neutrality is impossible with DPs. This is demonstrated to account for their properties laid out at the beginning of this chapter, i.e. that DPs cannot appear in existential and existentially closed constructions, can fill in canonical subject position, have Number specification, have overt structural case, and can take wide scope with respect to other operators.

5.4.1 Pronouns and proper nouns

Pronouns and proper nouns are referential elements of type *e*, which always project to a DP and φP. Assuming that all DPs must have overt structural case in Turkish, they must be associated with the following structure.

(28) Structure of pronouns/proper nouns



Note that number on D elements is an uninterpretable φ feature which must be checked against the interpretable features in φ. φ itself is an identity function which serves to make sure that the DP meets certain conditions (i.e. appropriate person, number, and gender specification).

Pronouns and proper nouns are banned from existential (29a) and existentially closed (29b) contexts, carry Number (cannot be number-neutral) (29c), trigger agreement (29d), must carry overt case (29e), can fill canonical subject positions (29f), and are referential and thus scopeless (29g).

(29) Distribution of pronouns and proper nouns

a. *Ev-de {*o* / *Can*} var. (existential)
house-LOC (s)he / Can exist
'There is {him / Can} in the house.'

b. *Sen-i {*o* / *Can*} ara-dı.[62] (existentially closed)
you-ACC (s)he / Can call-PST
'You, {he / Can} called.'

c. {*Hırsız* / *Hırsız-lar*} ev-e gir-miş. (number-neutrality)
thief / thief-PL house-DAT enter-PST
'{The thief$_{SG}$ has / The thieves$_{PL/*NEUT}$ have} broken in the house.'

[62] This sentence is actually grammatical, but not under an existential reading. I would like to propose that the grammatical reading has the semantics in (i.b) not (i.a).

(i) a. * ∃ x,y [you(x) ∧ he/Can(y) ∧ called(y,x)]
b. called(he/Can, you)

d. {*On-lar* / *Hırsız-lar*} ev-e gir-miş-ler. (agreement)
he-PL thief-PL house-DAT enter-PST-3PL
'{They / The thieves} have broken in the house.'

e. Can {*on-lar*(-ı)* / *ev-ler*(-i)*} al-dı. (case)
Can it-PL-ACC / house-PL-ACC buy-PST
'Can bought {them / the houses}.'

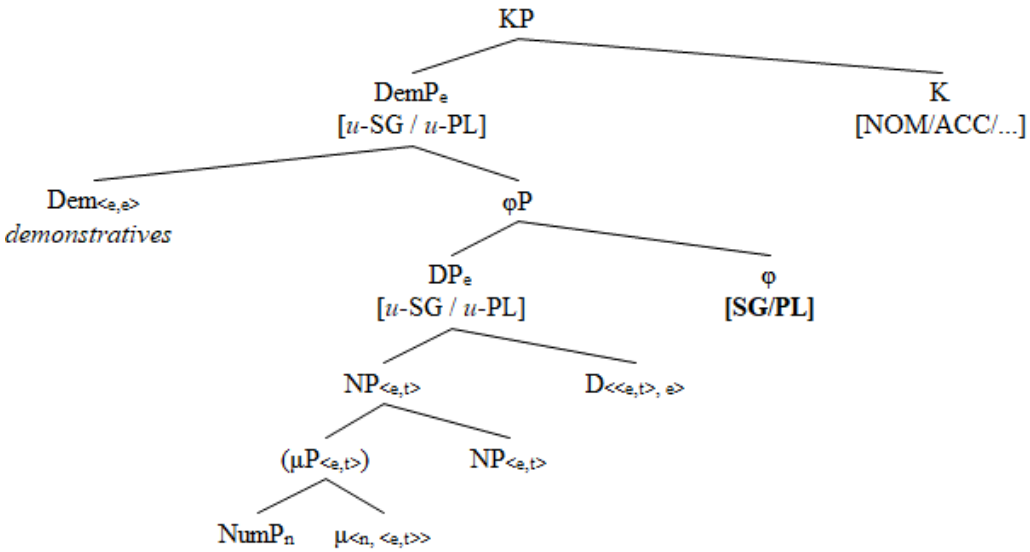
f. {*On-lar* / *Araba(-lar)*} garaj-da. (subject position)
it-PL / car-PL garage-LOC
'{It(They) / The car(s)} is(are) in the garage.'

g. Can *on-u* / *Selen-'i* gör-me-di. (scope)
Can he-ACC Selen-ACC see-NEG-PST
'Can did not see {him / Selen}.' *¬ > *him/Selen* | *him/Selen* > ¬

5.4.2 [Dem-(μP)-NP] constructions

I assume with Lewis (2014) that demonstratives are merged externally to the DP, which means that "[d]ets are always present in Dem constructions, even when not overtly pronounced" (2014, p. 10). Given that Dems take *e*-type referential DPs and return another *e*-type nominal, they must be of type <e,e>.[63]

(30) Structure of demonstratives



[63] This is a simplified version of the one proposed in Lewis (2014), who takes demonstratives to be of type <<s,e>, <s,e>> where *s* refers to the DP-internal *situation time*.

Being referential nominals projecting to a DPs, Dem constructions are correctly predicted to pattern with pronouns and proper nouns in all the relevant tests.

(31) Distribution of [Dem-(µP)-NP] constructions

a. *Sınıf-ta *bu (üç tane) öğrenci* var. (existential)
classroom-LOC these three CL student exist
'There are these (three) students in the classroom.'

b. *Sen-i *bu (iki tane) adam* ara-dı. (existentially closed)
you-ACC this two CL man call-PST
'You, these (two) men called.'

c. *Bu (beş tane) hırsız* ev-e gir-miş. (number-neutrality)
this five CL thief house-DAT enter-PST
'This thief$_{SG}$ has (These thieves$_{PL/*NEUT}$) have broken in house.'

d. *Bu {hırsız-lar / üç tane hırsız}* ev-e gir-miş-ler (agreement)
this thief-PL three CL thief house-DAT enter-PST-3PL
'{This thief / These five thieves} *has / have broken in the house.'

e. Can *{bu ev*(-i) / bu üç tane ev*(-i)}* al-dı. (case)
Can this house-ACC this three CL house-ACC buy-PST
'Can bought {this house / these three houses}.'

f. *{O araba / O iki tane araba}* garaj-da. (subject position)
that car that two CL car garage-LOC
'{That car / Those two cars} are in the garage.'

g. Can *o (iki) makale-yi* oku-ma-dı. (scope)
Can that two article-ACC read-NEG-PST
'Can did not read those two articles.' *¬ > *article* | *article* > ¬

5.4.3 [D-(µP)-NP] constructions

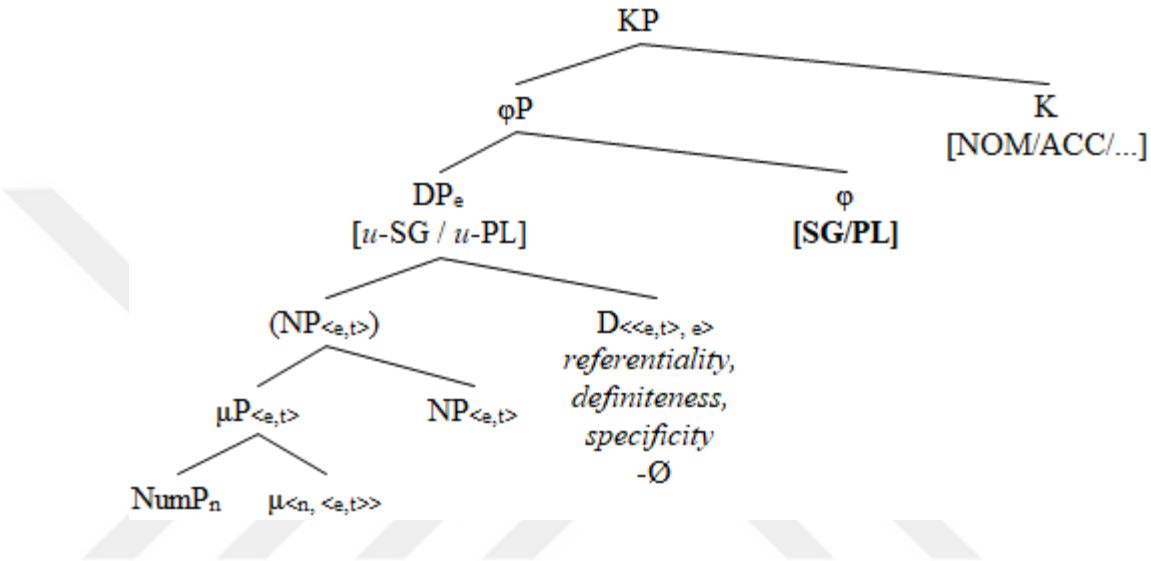
A question arises as to the maximal projection of sentences like (32). Given their referential status, do they project to DP?

(32) a. Polis *üç tane sürücü-yü* cezalandır-dı.
policeman three CL driver-ACC fine-PST
'The policemen fined the three drivers.'

b. *Üç tane öğrenci* disiplin kurulun-a sevk ed-il-di.[64]
three CL student disciplinary board-DAT refer do-PASS-PST
'The three students were referred to the disciplinary board.'

I would like to propose that they indeed do. The D° in such constructions is filled with a phonologically null determiner (-Ø) of type <<e,t>, e>.

(33) Structure of [D(-µP)-NP] constructions



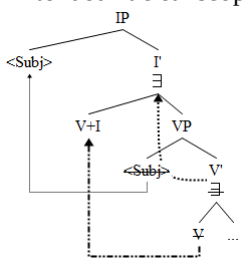
[64] [µP-NP] constructions in Turkish can also have a quantified reading, in which case they would be associated with type <<e,t>, <<e,t>, t>>. Note however that quantified [µP-NP] constructions are not grammatical in all classifier languages. In Chinese, for instance, (i) can only have an existential reading.

(i) liu-ge ren tai-qi-le na-kuai shitou
six-CL person lift-up-SFP that-CL rock

a. *'The six persons have lifted that rock.'
b. 'There are six persons who have lifted that rock.'

Tsai (2008) argues that for the reading in (i.a) to be available, V-to-I raising must apply, thereby extending the domain of Diesing's (1992) nuclear scope to I, for which he proposes his Extended Mapping Hypothesis. Since, however, Chinese lacks overt agreement morphology, it does not license V-to-I raising at all, overtly or covertly. Therefore, the quantified reading cannot be derived. Given that Turkish allows such readings, it must be the case that V-to-I raising applies, allowing quantifier-raising of µPs to IP and extending the domain of existential closure as in (ii).

(ii) Extended nuclear scope of Turkish



Note that they have the same distribution as [Dem-(µP)-NP] Constructions.

(34) Distribution [D-(µP)-NP] constructions

a. Agreement

Üç tane öğrenci yardım iste-mey-e gel-di-ler.
three CL student help demand-NOML-DAT come-PST-3PL
'The three students came$_{PL}$ to ask for help.'

b. Case

Yüz *tane bisiklet-*(-in)* öğrenci-ler-e ver-il-mesi sevindirici.
hundred CL bicycle-GEN student-PL-DAT give-PASS-NOML pleasing
'It is pleasing that the hundred bicycles were given to the students.'

cf. Öğrenci-ler-e *yüz tane bisiklet* ver-il-mesi sevindirici.

c. Subject position

Efendim, (o) *üç tane memur* kurum-umuz-a ulaştılar.
sir that three CL employee institution-1PL.POSS-DAT arrived
'Sir, the(those) three new employees have arrived at our institution.'

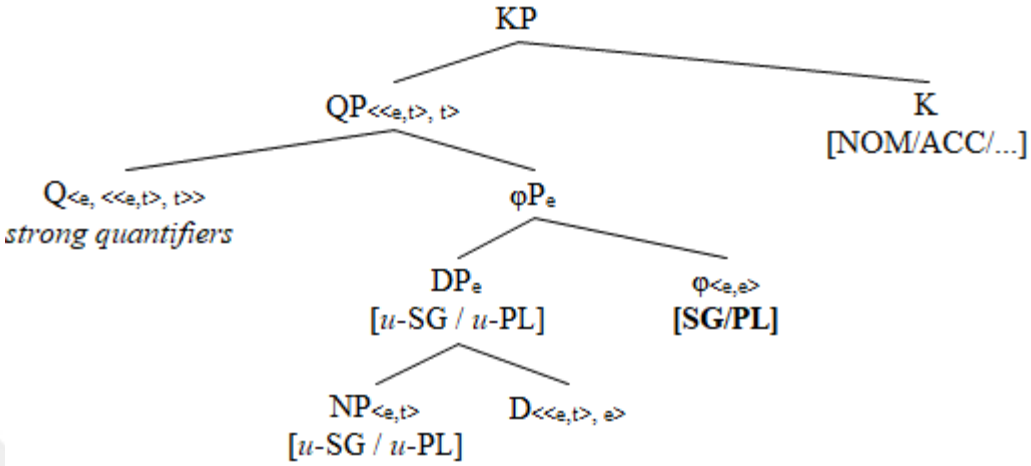
This leads me to the conclusion that all referential nominals in Turkish are DPs, as evidenced by the observation that they pattern with canonical examples of D elements like pronouns and proper nouns.

5.4.4 Strong quantifiers

Strong quantifiers also project to a DP. Unlike referential Ds, however, strong quantifiers are generally taken to be <<e,t>, <<e,t>, t>>-type objects, which take <e,t>-type nouns as complements and return <<e,t>, t>-type generalized quantifiers (Barwise & Cooper, 1981). Though nothing crucially hinges on the theory assumed, I nevertheless follow Matthewson's (2001) proposal that strong quantifiers take as

complements not <e,t>-type predicative NPs but *e*-type argumental DPs, and are thus derived in a two-step fashion as in (35).

(35) Structure of strong quantifiers



Note first that in this view, DPs are uniformly associated with type *e*. Further, as we shall see below, strong quantifiers never combine with number-neutral bare nouns. In fact, they always select a Number-specified complement.

(36) a. PL-selecting strong quantifiers

her / *çoğu* öğrenci(*-ler)
every most student-PL
'every student / most students'

b. SG-selecting strong quantifiers

tüm / *bütün*[65]/ *bazı* öğrenci*(-ler)
all all some student-PL
'all / all / some students'

[65] Note that *tüm* and *bütün* have dual uses: one as a strong quantifier meaning 'all', the other as an adjective meaning 'whole'. While the quantifier version always selects a plural noun, the adjective version combines with bare nouns.

(i) a. *Bütün bilgisayar*(-lar)* su al-mış. b. *Bütün bilgisayar(*-lar)* su almış.
all computer-PL water take-PST whole computer-PL water take-PST
'All the computers have taken in water.' 'The whole computer has taken in water.'

If these quantifiers combine with DPs, which by definition must be Number-specified due to the obligatory presence of the φP, the fact that they either select a singular or a plural complement follows as a natural consequence.

Matthewson (2001) presents several pieces of evidence for her analysis. First, in St'át'imcets, a Salishan language spoken in Canada, strong quantifiers never combine with NPs; they always require the presence of a determiner to appear between the quantifier and the noun. Note incidentally that this is also the case with the optional appearance of a determiner in some English QPs like *all/half (the) students*.

Second, in partitive constructions of the form *John ate most of the apples*, the quantifier combines with a PP, whose semantic type is controversial. In Matthewson's (2001) analysis, however, the quantifier is taken to combine with a DP, and *of* is treated as a semantically vacuous case marker. Third, she argues that the domain restriction typical of strong quantifiers is actually done by the D before the quantifier is introduced. Finally, Kallulli and Rothmayr (2008) demonstrate that determiner doubling constructions in Bavarian German, which is also optionally attested in Standard German to a lesser extent, can best be accounted for under Matthewson's (2001) two-step model of QPs.

Strong quantifiers in Turkish can take scope over other operators, carry strong existential presuppositions, and impose selectional restrictions on their complements. One further property of strong quantifiers is that they reject combination with the μP.[66] As such, they are correctly predicted to contrast with

[66] Except for *her* 'every'.

(i) *Her* iki öğrenci de sınıf-ta.
every two student all classroom-LOC
'Both students are in classroom.'

other bare nouns and μPs in rejecting existential (37a) and existentially closed (37b) constructions as well as number-neutral interpretations (37c). They can also trigger agreement (37d), require over structural case (37e), can appear in canonical subject positions (37f), and are scopally active (37g).

(37) Distribution of strong quantifiers

a. *Sınıf-ta {*her öğrenci* / *tüm öğrenciler*} var. (existential)
classroom-LOC every student all student-PL exist
'There {is every student / are all students} in the classroom.'

b. *Köy-e {*her doctor* / *tüm doctor-lar*} gel-di. (existentially closed)
village-DAT every doctor all doctor-PL come-PST
'to the village came {every doctor / all doctors}.'

c. {*Her öğrenci* / *tüm öğrenci-ler*} ödev-i yap-mış. (neutrality)
every student / all student-PL homework-ACC do-PST
'{Every student$_{SG}$ has / all students$_{PL/*NEUT}$ have} done the homework.'

d. *Tüm öğrenci-ler* sunum yap-tı-lar. (agreement)
all student-PL presentation do-PST-3PL
'All students *has / have done a presentation.'

e. Can {*her soru*(-yu)* / *tüm soru-lar*(-ı)*} yanıtla-dı. (case)
Can every question-ACC all question-PL-ACC answer-PST
'Can answered {every question / all questions}.'

f. {*Her araba* / *Tüm araba-lar*} garaj-da. (subject position)
every car all car-PL garage-LOC
'{Every car is / All cars are} in the garage.'

g. Öğrenci-ler *çoğu makale-yi* oku-ma-dı. (scope)
student-PL most article-ACC read-NEG-PST
'The students did not read most articles.' *most* > ¬

Let us summarize the distribution of different types of Turkish nominals in Table 17.

But I believe this is not the type of construction I am interested in here. Such constructions have a partitive flavor and can only be interpreted with a special context. The internal constituency of these constructions are beyond this study.

Table 17. Distribution of Different Types of Nominals

Distribution	Bare noun	μP	Pronoun & proper noun	[Dem-(μP)-NP]	[D-(μP)-NP]	Strong quantifier
can appear in existential constructions	√	√	*	*	*	*
is number-neutral	√	√	*	*	*	*
can appear in canonical subject position	*	*	√	√	√	√
triggers agreement	*	*	√	√	√	√
must have overt structural case	*	*	√	√	√	√
can take scope	*	*	*	*	*	√

The discussion so far has demonstrated that this major split follows from the fact that NPs and μPs do not project to a DP and thus lack the number-specifying projection of φP, while referentials and strong quantifiers project to a DP and thus are obligatorily specified for Number.

5.5 Some issues

This section discusses several issues that can potentially challenge the present account. It is demonstrated that these sets of data either follow from the analysis proposed or that they can be explained by reference to independently established facts.

5.5.1 Definiteness effect?

Persian has much in common with Turkish in that its bare objects have number-neutral readings (38a); its bare plural objects are ungrammatical (38c); and the presence of *–(r)o*, which is typically glossed as an Object Marker (OM),

automatically triggers a definite reading (38b,d). This has led some to conclude that *–(r)o* marks definiteness/specificity (Gebhardt, 2009; Sato & Karimi, 2016).

(38) a. *Sæg* did-æm. (Persian)
dog see.PST-1SG
'I saw a dog / dogs.'

b. *Sæg-o* did-æm.
dog-OM see.PST-1SG
'I saw the dog.'

c. **Sæg-a* did-æm.
dog-PL see.PST-1SG
'I saw dogs.'

d. *Sæg-a-ro* did-æm.
dog-PL-OM see.PST-1SG
'I saw the dogs.'

Now, note the exact parallel between Persian *–(r)o* and Turkish accusative marker *–(y)I*.

(39) a. *Köpek* gör-dü-m. (Turkish)
dog see-PST-1SG
'I saw a dog / dogs.'

b. *Köpeğ-i* gör-dü-m.
dog-ACC see-PST-1SG
'I saw the dog.'

c. **Köpek-ler* gör-dü-m.
dog-PL see-PST-1SG
'I saw dogs.'

d. *Köpek-ler-i* gör-dü-m.
dog-PL-ACC see-PST-1SG
'I saw the dogs.'

Do Persian *–(r)o* and Turkish ACC marker encode definiteness? Given the DP analysis assumed so far, it cannot be, as referentiality is crosslinguistically encoded in D. Enç (1991) and Kelepir (2001) establish that Turkish ACC encodes specificity

rather than definiteness. In fact, (40) establishes that Turkish ACC cannot itself be a marker of definiteness, since it occurs with indefinite (specific) nominals.

(40) a. *Birkaç tane köpeğ-i* gör-dü-m.
a.few CL dog-ACC see-PST-1SG
'I saw a few dogs.'

b. *Bazı köpek-ler-i* gör-dü-m.
some dog-PL-ACC see-PST-1SG
'I saw some dogs.'

With Zareikar and Melchin (2014), I propose that both Persian *–(r)o* and Turkish *–(y)I* are actually case markers. But given that (at least overt) case only appears with DPs in these languages, we have the impression of a definiteness effect, when in fact these morphemes indirectly signal the DP status of the nominal. The definiteness effect arises only in the absence of indefinite quantifiers and/or markers like Turkish *bazı* 'some' and Persian *-i*. Of particular importance is the ungrammaticality of (38c) and (39c), where number is present but case is absent. Given the present proposal that Number is a property of DPs only, and that all DPs must have overt case, the ungrammaticality follows as a natural outcome.

Note further that in both Persian and Turkish, overt case and number markers also appear in subject DPs. But because singular and nominative are phonologically null in both languages, they typically go unnoticed, leading to the incorrect impression that a bare noun functions as an argument.

(41) a. *Bæčče-Ø-Ø* gerye kærd-Ø. (Persian)
child-SG-NOM cry do.PST-3SG
'The child cried.'

a'. *Bæčče-ha-Ø* gerye kærd-ænd.
child-PL-NOM cry do.PST-3PL
'The children cried.'

b. *Çocuk-Ø-Ø* ağla-dı-Ø. (Turkish)
child-SG-NOM cry-PST-3SG
'The child cried.'

b'. *Çocuk-lar-Ø* ağla-dı-lar.
child-PL-NOM cry-PST-3PL
'The children cried.'

This leads me to conclude, in support of Longobardi (1994), that arguments in Turkish must project to a DP, as evidenced by the observation that they must have number specification and overt case. Data which motivated the so-called definiteness effect follows from the model as is.

5.5.2 CL/M – number complementarity?

Recall Sauerland's (2003) proposal from Section 5.2.3 that Number is only semantically interpreted in φP. Then, why is it that the definite and plural [DP-μP-NP] construction in (42) is incompatible with the plural marker irrespective of the presence of a classifier. After all, it is a DP that projects to a φP with an interpretable plural feature.

(42) *Üç (tane) öğrenci(*-ler)* disiplin kurulun-a sevk ed-il-di-ler.
three CL student-PL disciplinary board-DAT refer do-PASS-PST-3PL
'The three students were referred to the disciplinary board.'

We cannot simply say that the ban against the plural marker is due to the presence of a classifier because I have argued earlier that classifiers do not stand in a paradigmatic relation to number markers: The former targets CARD, the latter targets φ. Why, then, is this apparent incompatibility between classifier and plural markers?

Before suggesting an answer, I would like to point out that numerals reject number markers not only in the presence of a classifier but also of measure or kind term, an observation that has not received due attention.

(43) a. üç *kilo* elma(*-lar)
three kilo apple-PL

b. iki *tür* bilgisayar(*-lar)
two kind computer-PL

I have already illustrated in Section 2.4 that, µP only combines with number-neutral bare nouns. Thus, because numerals fill [Spec, µP], we conclude that µ is present in (43); and since µP rejects number-marked nominals, the construction becomes ungrammatical.

This line of reasoning has some validity. Observe first that with strong quantifiers (i.e. in the absence of µP), nominals accept number markers.

(44) {bu / bazı / çoğu / Ø} *kitap-lar*
{this / some / most / the} book-s

Second, when the numeral is contained in an RC or an attributive modifier, number markers become possible.

(45) a. [$_{RC}$ sayıca üç tane ol-an] bu *kitap-lar*
in.number three CL be-REL this book-s
'these books that are three in number'

b. [$_{AttrP}$ üç kilo-luk] *kavun-lar*
three kilo-ATTR watermelon-PL
'three-kilo watermelons'

Third, µP can occur as primary or secondary predicates to plural DPs.

(46) a. Elma-lar *iki tane*.
apple-PL two CL
'The apples are two.'

b. Elma-lar-ı *iki tane* san-mış-tı-m.[67]
apple-PL-ACC two CL think-PERF-PST-1SG
'I considered the apples two (in number).'

Lastly, Western Armenian allows numerals to co-occur with number markers while Persian allows them with classifiers as well (Gebhardt, 2009, p. 211). The only difference is that Persian plural-marked μPs automatically signal the DP status of the nominal, while in Western Armenian they arise as agreement markers, hence their optionality.

(47) a. yergu shenk(-er). (Western Armenian)
two building-PL
'two buildings'

a'. yergu had shenk(*-er)
two CL building-PL

(Bale & Khanjian, 2008, p. 75)

[67] Ueda and Haraguchi (2008) argue for a similar analysis for comparable Chinese and Japanese constructions. They propose that when the noun finds a way of getting to the left of the classifier, either by merge or by movement, the NP accepts plural marking.

(i) a. XiaoQiang-men san-ge (ren) (Chinese)
XiaoQiang-PL three-CL person
'XiaoQiang (them) three'

b. *xuesheng-men san-ge (ren)
student-PL three-CL person
'three students'

(ii) san-nin-no gakusei-tati (Japanese)
three-CL-GEN student-PL
'three students'

(i.a) is grammatical because the proper noun *XiaoQiang* merges in [Spec, DP], i.e. to the left of the numeral-classifier sequence. Since common nouns like *xuesheng* 'student' merge low at N, they have to raise to DP. Nevertheless, the raising violates Head Movement Constraint, hence the ungrammaticality. Interestingly, the Japanese counterpart of (i.b) is grammatical. According to Ueda and Haraguchi (2008), this is because Japanese classifiers merge as NP adjuncts, not constituting barriers for head movement. A similar account is proposed in Li (1999) for the incompatibility of Chinese classifiers with the plural marker *men*. To the extent that they are on the right track, such data corroborate our claim that the incompatibility of classifiers with numerals is due to the NP being to the right of the μP.

b. do (ta) moæ?lem (Persian)
two CL teacher
'two teachers'

b'. do *(ta) moæ?lem-ha
two CL teacher-PL
'the two teachers'

cf. *do moæ?lem-ha

(Hamedani, 2011, pp. 8-9)

In Turkish, on the other hand, number markers in the presence of a numeral are not allowed even with DPs. Pending further research, I would like to hypothesize that Turkish number markers wish to attach onto the NP (which then will have to check these features against φP), but μP rejects these markers due to NNC. Yet, we know for sure that μP-containing DPs have Number, as they can control agreement (see (42) above and Section 5.4.3). The resolution seems to be that Number in such cases becomes phonologically null, satisfying the requirements of both number-rejecting μP and number-requiring DP.

5.5.3 Other plurals

So far, we have developed an account of number marking in the usual sense, i.e. a process of sum formation out of the atomic individuals in the domain of a bare noun. The theory proposed so far restricts this type of number marking to DPs. plural-marked nominals, however, have a wider distribution in Turkish than just DPs. Other forms of plural include plural of abundance, plural of types, and pluractionals, among others. An analysis of the latter two forms of plural is given in Ketrez (2004); and a comprehensive account of Turkish verbal pluractionals is offered in Aksan and Aksan (2009a; 2009b). In this section, I briefly review an inexhaustive number of these cases and discuss how they fit the overall picture that has emerged.

Plural of types:

One type of non-canonical plural creates plurality of types out of a bare noun. A case in point is constructions like (48) in which a bare plural appears caseless in the object position, which means that it lacks a DP layer and has to be number-neutral.[68] Crucially, in stark violation of the present account of Number, the plural in this case is interpreted semantically.

(48) Bugün *giysi-ler* al-dı-m.[69]
today cloth-PL buy-PST-1SG
'I bought clothes today.'

Examples like these, however, do not pose a challenge for minimally two reasons. First, such constructions are rare; most of them appear either in the positive or negative only. Thus, the negative version of (48) (i.e. **Bugün giysiler almadım* 'I did not buy clothes today') is ungrammatical unless *giysiler* 'clothes' is contrastively focused.

Second, these do not denote the plural in the sense of sum formation. Rather, the plural in such cases is a typical example of plural of types.

[68] Based on their ability to act as antecedents for pronouns and to allow gapping, Ketrez (2004) argues that type-plurals lack NumP but do have a DP layer. I believe the evidence is inconclusive, but for reasons of space, I will not go into details here, hoping to address them at a future time.

[69] Ketrez (2004) proposes that the plural marker *-lAr* in such sentences occupies the head position of a classifier phrase as in (i).

(i) [DP [CLP [NP] *-lAr*]]

I do not adopt this analysis simply because classifiers occupy μ° and always require the presence of a numeral. Further, the notion of "classifier" and its function is not clear in Ketrez (2004).

(49) Bugün *giysi-ler* al-dı-m…
today cloth-PL buy-PST-1SG
'I bought clothes today…'

i. **üç tane* 'three CL'
ii. *türlü türlü* 'of varying kinds'

Since (49) only accept a continuation in which reference is made to kinds of clothes, I conclude that *-lAr* in this case marks the plurality of kinds, and the conjecture that more than one clothes were bought arises only indirectly. Thus, whether such cases involve lexical pluralization à la Alexiadou (2011) or Wiltschko (2008), or more productive syntactic processes, we can still hold to our argument that sum-forming Number is only relevant for DPs, and conclude that they do not pose a challenge to the model developed here.

Plural of abundance:

Next comes the issue of plural of abundance, which comes typically but not exclusively with mass nouns.

(50) a. Baş-ım-a *su-lar* dökül-dü.
head-1SG.POSS-DAT water-PL fall-PST
'Waters fell on my head.'

b. *Yat-lar*, *kat-lar* iste-mi-yor-um.
yacht-PL floor-PL want-NEG-IMPF-1SG
'I do not want yachts and apartments.'

The function of *-lAr* in (50a) is not to form sums of *water* from atoms, since mass nouns have no atoms to begin with. This sentence simply denotes that water fell in abundance, more than the amount one would normally expect. Likewise, (50b) is not about many yachts or apartments, but rather an abundance of wealth including a yacht and an apartment. Alexiadou (2011) proposes that the pluralization in such

cases a lexical process, and that the plural attaches to noun root (see Section 2.5.3). Therefore, these sentences do not constitute a counterexample to the proposal that only DPs in Turkish express number in the sense sum formation.

Pluractionality:

One further case of non-sum-forming plurals is observed in the phenomenon of 'pluractionality', a term introduced by Newman (1990) to describe cases in which a morphological marker on the verb is used to denote event plurality. These involve plurality of the event either in a single occasion or in multiple occasions.

To the best of my knowledge, it was Banguoğlu (1956) who first addressed Turkish verbs denoting event plurality. In Turkish, pluractionality is normally encoded on the verb, typically by morphemes like *-AlA-* and *-AklA* attached to the stem. Aksan and Aksan (2009b, p. 7) provide the following examples.

(51) a. Bisküvi-ler-i kır-*ıkla*-yın.
biscuit-PL-ACC break-EPL-IMP
'Crumble the biscuits.'

b. Herkes ağz-ın-da birşey-ler gev-*eli*-yor.
everybody mouth-3SG.POSS-LOC something-PL mumble-EPL-IMPF
'Everybody mumbles something in his mouth.'

These morphemes add to their respective bases the interpretation that the events of 'breaking' and 'mumbling' take place more than once.

As Ketrez (2004) observes, however, verbal affixation is not the only way in Turkish to derive event plurality. In certain cases, the plurality of event can surprisingly be achieved by pluralizing the object noun.[70]

[70] Pluractionality can also be achieved by reduplicating the μP in the form of *John ate the biscuits* [*two by two*]. See Donazzan and Müller (2015) for a pluractional analysis of Mandarin and Karitiâna (a Tupian language spoken in Brazil) reduplicated numerals.

(52) a. Çok kötü-ydü. *Masa-lar*-a vur-ul-du, *küfür-ler* ed-il-di, …
very bad-was table-PL-DAT hit-PASS-PST swear-PL make-PASS-PST
'It was very bad. Tables were hit, swear words were used, …'

b. Çok kötüydü. *Masa*ya vuruldu, *küfür* ed-il-di, …
'It was very bad. Tables were hit, swear words were used, …'

c. Ayşe Kur'an-lar oku-du.
Ayşe Koran-PL read-PST
'Ayşe read the Korans.'

(Ketrez, 2004, p. 2)

(52b) states that 'tables were hit and swear words were used', with no commitment as to whether this event happened once or several times. Here, both the number of tables hit and swear words used as well as the number of occasions this happened is left undetermined. (52a), on the other hand, asserts that these events happened more than once, leaving the number of tables hit and swear words used undetermined. In other words, the bare plurals *masalar* 'tables' and *küfürler* 'swear words' in (52a) are actually number-neutral. The plural marker *-lAr* on these nominals encodes the plurality of the events. The number-neutrality of *-lAr*-marked nominals in such cases is made clear in (52c), taken from Ketrez (2004), in which a unique book, namely the Koran, is pluralized.[71]

Addressing a similar pattern in French, Spector (2003) argues that the plural NP *des lapins* in (53) refers to number-neutral set, as no plurality of rabbits can be killed more than once.

(53) Le chasseur a tué *des lapins* à plusieurs reprises. (French)
'The hunter has killed rabbits repeatedly.'

(Spector, 2003, p. 304)

[71] Again, Ketrez (2004) inserts the plural marker *-lAr* into the head position of a classifier phrase, which I believe is mistaken since there is no classification of the noun in any sense. Further, a classifier cannot occur without a numeral given their <n, <e,t>> type. I believe Spector's (2003) licensing analysis squares better with the interpretation of these constructions.

What this sentence means is that a different rabbit was killed in different occasions. Spector (2003) argues that the plurality on the noun *lapins* 'rabbits' is licensed by an operator introduced by the adverbial *à plusieurs reprises* 'repeatedly', and indicates the plurality of 'killing events' rather than 'rabbits killed'.

A thorough analysis of pluractionality in Turkish would take us too far afield. I assume without argumentation that a similar pattern is observed in Turkish, and that potential licensers of nominal number markers minimally include aspectual operators alongside φPs. I thus conclude that the presence of such number morphology on nominals, which are subject to licensing by some higher functional head, either (i) denote pluralities of things other than the atoms in the denotation of the noun (as in the case of plurals of types and abundance) or (ii) arise as uninterpretable agreement reflexes of a higher interpretable feature (as in the case of pluractionals). As such, these examples cease to pose a challenge to the model developed in this study.

5.5.4 *bazı* 'some'

Enç (1991) first noted the interpretive and distributional difference between Turkish strong and weak quantifiers, demonstrating that overt structural case is obligatory with strong quantifiers and optional with weak ones. Weak quantifiers receive a specific reading, which Enç (1991) equates with partitivity, when overtly case-marked, and a non-specific one when not overtly case-marked. Pointing to the similarity in behavior between accusative-marked indefinites and *bazı* 'some' in that both can escape scope islands, Kelepir (2001) concludes that *bazı* 'some' is interpreted by the general interpretive mechanism of choice functions.

Against this background and building on Kelepir (1991), I argued earlier that *bazı* 'some' is a strong quantifier. This, however, leads to the incorrect prediction that it should not appear in existential constructions.

(54) a. Sınıf-ta *bazı* öğrenci-ler var.
classroom-LOC some student-PL exist
'There are some students in the classroom.'

b. Sınıf-a *bazı* öğrenci-ler geldi(*-ler).
Classroom-DAT some student-PL come-PST-PL
'To the classroom came$_{*PL}$ some students.'

It appears that *bazı* has dual character: a strong quantifier presupposing the existence of a set, and a weak quantifier meaning *birkaç* 'a few'. Indeed (54a) can best be paraphrased as (55).

(55) Sınıf-ta *birkaç* öğrenci var.
classroom-LOC a.few student exist
'There are a few students in the classroom.'

Yet, even when used as a weak quantifier, *bazı* retains its selectional properties and combines with a bare plural. Significantly, existential constructions involving *bazı* 'some' lack number specification since they cannot trigger plural agreement as (54b) establishes.

5.5.5 *az* 'little/few' and *çok* 'much/many'

A further challenge comes from quantity expressions like *az* 'little/few' and *çok*[72] 'much/many', which apparently can denote quantity. They appear in existential constructions, and reject number agreement, which puts them on a par with weak quantifiers.

[72] Not to be confused with the strong quantifier *çoğu* 'most'.

(56) Sınıf-ta {*az* / *çok*} öğrenci(*-ler) var.
classroom few many student-PL exist
'There {few / many} students in the classroom.'

In contrast to weak quantifiers and numerals, however, *az* and *çok* reject co-occurrence with classifiers and measure words.

(57) a. *{*az* / *çok*} tane kitap
few many CL book
'few / many books'

b. *{*az* / *çok*} litre süt
little / much liter milk
'little / much liters of milk'

On the other hand, *az* and *çok* do not pattern with DPs or strong quantifiers either. They reject case markers (58a), cannot trigger agreement (58b), and cannot occupy canonical subject positions (58c).

(58) a. Bugün {*az* / *çok*} makale(*-yi) oku-du-m. (case)
today few many article-ACC read-PST-1SG
'I read the {few / many} articles today.'

b. *{*Az* / *Çok*} öğrenci sınıf-a gel-di-ler. (agreement)
few many student classroom-DAT come-PST-3PL
'{Few / Many} students came$_{PL}$ into the classroom.'

c. *{*Az* / *Çok*} kitap raf-ta. (subject position)
few many book shelf-LOC
'{Few / Many} books are on the shelf.'

This leads to the conclusion that quantity expressions are neither strong quantifiers not weak quantifiers or numerals. A question arises as to their categorial status, and in particular, how they end up denoting quantity despite not patterning with canonical examples of quantifiers.

There a considerable literature behind expressions of quantity like *little* and *much*. Taking their prenominal position and apparent complementarity with several

quantifiers, some argue that these are quantifiers/determiners, while others maintain that they are adjectives because they can appear as predicates. Rett (2018), however, demonstrates quite convincingly that such words are neither quantifiers/determiners nor adjectives in the usual sense. She cites three contexts in which quantity expressions can appear while adjectives and quantifiers/determiners cannot. I exemplify them here with data from Turkish.

(59) a. Can bugün *çok* çalış-tı. (VP modifier)
Can today much work-PST
'Can worked a lot today.'

b. Garaj ev-in *az* aşağısında. (PP modifier)
garage house-GEN little below
'The garage is a little below the house.'

c. Özge Ceren-'den *çok* daha uzun. (comparative modifier)
Özge Ceren-than much more tall
'Özge is much taller than Ceren.'

In light of this data, I assume with Rett (2018) that quantity expressions like *az* 'little/few' and *çok* 'much/many' are degree modifiers rather than quantifiers or adjectives. They range over and thus modify the intervals of a degree, which is either overtly provided or contextually supplied. With VPs, degree modifiers presumably measure degrees of the event, while with PPs, they "encode information about the size of a spatial interval or vector (Rett, 2018, p. 6)". Given the earlier proposal that cardinality, being a μ element, can also be regarded as a form of measurement, with natural numbers corresponding to the intervals, the degree modifiers *az/çok* 'few/many' in (60) encode the information that the cardinality of students in the classroom is *few/many* with respect to some contextually understood degree.

(60) Sınıft-a *az* / *çok* öğrenci var.
class-LOC few many student exist
'There are few/many students in the classroom.'

To sum, words like *az* 'little/few' and *çok* 'much/many' behave differently from weak quantifiers and numerals on the one hand and strong quantifiers and determiners on the other because of their categorial status as degree modifiers.

5.5.6 Negative existential *yok*

One last piece of potential challenge I would like to address in this section is the grammaticality of (61).

(61) *Anahtar-lar* masa-da yok.
key-PL table-LOC NEG
'There are not the keys on the table.'

Here, a plural-marked definite nominative DP puzzlingly appears in an existential construction. Appearances are misleading though. The fact is that Turkish negative existential *yok* can be used in many constructions where it only marks negation, stripped of its existential semantics.

(62) a. Birşey anla-dığ-ım *yok*.
anything undertand-NOML-1SG.POSS NEG
'I do not understand anything.'

b. A: Gör-dü-n mü? B: *Yok*.
see-PST-2SG QUES NEG
'Did you see?' 'No.'

In (60), *yok* only means *not*, and is thus semantically equivalent to (63).

(63) Anahtar-lar masa-da *değil*.
key-PL table-LOC NEG
'The keys are not on the table.'

In fact, ungrammaticality obtains when we substitute *yok* 'exist.not' with its positive counterparts *var* 'exists' (in (61)) (cf. **Anahtarlar masada var* 'There are the keys on the table'). Likewise, the positive existential *var* would not function as an acceptable positive answer to the question in (62b), strongly suggesting that *yok* in these constructions marks negation alone, not existentiality per se. This strengthens the argument that number marking is only relevant for DPs in Turkish, and that plural- or singular-marked nominals cannot appear in existential constructions.

5.6 Summary

This chapter addressed the morphosyntactic marking and semantic interpretation of Number in Turkish nominals. It was argued that, Turkish nominals fall in two major camps with respect to several tests: DPs and non-DPs, with semantically interpreted Number being relevant for DPs only. More specifically, only DPs project to φP where Number is expressed, while non-DPs, lacking this projection, always arise number-neutral.

Section 5.2 laid down some preliminary issues that form the basis of the upcoming discussion. Here, I went through arguments in Section 5.2.1 that point to the conclusion that morphological number markers do not always indicate semantic Number. It was thus concluded that the presence of plural morphology should not be taken at face value when establishing the specification of Number. Section 5.2.2 assumed and presented arguments for a DP layer in Turkish, in particular the observation that DPs always carry overt morphological structural case and that they never have number-neutral readings. After introducing the φP in Section 5.2.3, I proposed the Number Neutrality Condition in Section 5.2.4 according to which μP exclusively combines with number-neutral nouns, and presented theoretical as well

as empirical evidence in support of it. It was argued in particular that crosslinguistically observed idiosyncratic number marking in the presence of numerals can best be explained under the hypothesis that these number markers are not interpreted semantically but arise as a result of agreement with a higher functional head.

Section 5.3 discussed the properties of bare nouns and μPs in Turkish. Judging by their distribution with respect to the tests introduced at the beginning of this chapter, bare nouns and μPs were shown to lack the DP projection and hence Number specification. Thus, they are always interpreted number-neutrally and are restricted to contexts like existentials that handle such interpretations. Therefore, bare nouns and μPs are typically used when a discourse entity is first introduced into the discourse (see Section 1.3.6).

Nominals projecting to a DP layer were addressed in Section 5.4, where it was demonstrated that, since these project to a DP and subsequently to φP and KP, they must have overt Number specification as well as structural case. This prediction was shown to be met by the tests: All DPs are interpreted either in the singular or in the plural, can trigger agreement on a verbal predicate, can appear in canonical subject positions, must have overt structural case, and in the case of strong quantifiers, can have scope overt other operators.

Section 5.5 some potential challenges to the model presented and demonstrated that can be accounted for with reference to independently established facts. First, the possibility that overt case-marking induces a definiteness effect in ruled out in Section 5.5.1. The observation was that overt case marking only hints at the presence of the DP layer, and that a definite interpretation only arises in the absence of an indefinite quantifier, in which case we have an indefinite referential

reading. Section 5.5.2 addressed the problematic case of a referential μP which, despite projecting to DP, still resists plural markers. Per the Number Neutrality Condition, the noun must be number-neutral, rejecting plural markers. A plural φP, however, forces a plural interpretation of the noun. In the face of such conflicting requirements, it was proposed that the expression of plurality in such cases is done covertly. Section 5.5.3 addressed other forms of plurality marked on the noun, with the conclusion that these cases are not examples of canonical Number in the sense of sum formation. In particular, it was demonstrated that nouns can also bear plural morphology due to pluractionality, i.e. plurality of events. Crucially, such plural markers were shown to be subject to licensing by a higher operator like aspect, as in the case of other agreement markers that are licensed by φ. Section 5.5.4 addressed the dual character of *bazı* 'some', one as a strong quantifier and the other as a cardinality expression, demonstrating that only the latter can appear in existential constructions. Section 5.5.5 established the categorial status of *az* 'little/few' and *çok* 'many' as degree modifiers, and demonstrated that their quantity readings are readings are derived by processes other than measuring. Finally, the case of the negative existential *yok* was brought into the picture in Section 5.5.6. Its unpredicted appearance in definite expressions was linked to the observation that *yok* can mark simple negation in some contexts rather than existentiality per se.

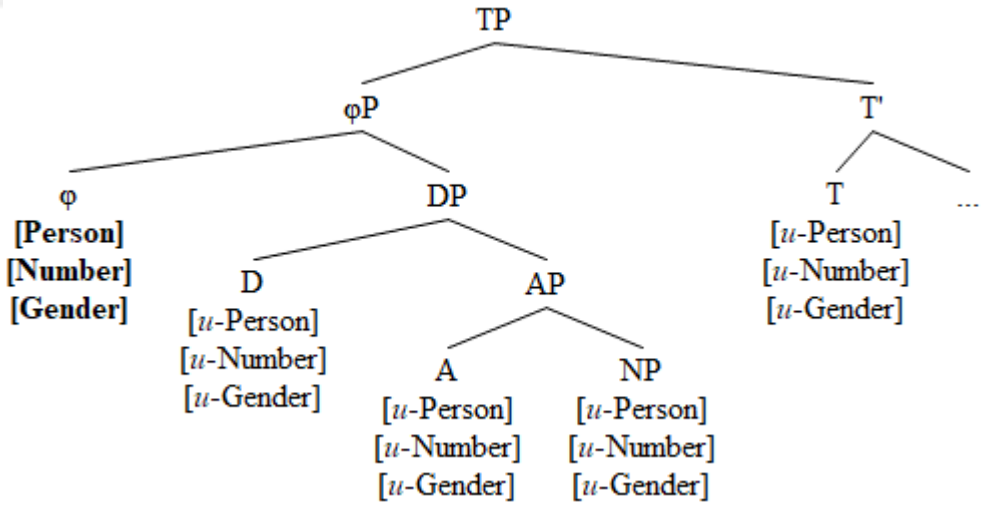
CHAPTER 6

PLURAL PRONOUN CONSTRUCTIONS

6.1 Introduction

In Chapter 5, I built my analysis of Number marking in Turkish on Sauerland's (2003) account of Number, which basically argues that interpretable φ-features such as person, number, and gender are located inside the φP which takes the DP as a complement. The upshot of the analysis is that other φ-features in the nominal domain, much like their clausal counterparts, arise as uninterpretable agreement reflexes of their interpretable counterparts in φ°. The biggest advantage of this model is that, as illustrated in (1), φ-features now stand in a position where they can control both DP-internal (i.e. nominal) and DP-external (i.e. clausal) agreement.

(1) Φ-feature agreement



This chapter addresses a particularly challenging interpretive phenomenon associated with pronouns and demonstrates that Sauerland's (2003) view of Number marking employed here, in consonance with other independently established facts, is

highly successful in accounting for this problematic set of data. The issue at stake here is the singular reference of plural pronouns in specific contexts.

In Turkish, plural pronouns normally have a strictly plural reference.

(2) a. Can *biz-i* selamla-dı. (Turkish)
Can we-ACC greet-PST
'Can greeted us/*me.'

b. *Biz* hazır-ız.
we ready-1PL
'We are / *I am ready.'

When they occur with a comitative-marked DP in what is known as Comitative Coordination (CC), however, they can also have a singular reference (3.ii) alongside the usual plural one (3.i).

(3) *Can-'la biz* beraber çalış-ıyor-uz.
Can-COM we together work-IMPF-1PL

i. '*Can and we* work together.' (EPPC)
ii. '*Can and I* work together.' (IPPC)

These are called Plural Pronoun Constructions (PPCs) in Schwartz (1988), Feldman (2002), Vassilieva and Larson (2005), and Vassilieva (2005). To avoid ambiguity, though, I will differentiate between constructions in which the plural pronoun has exclusively plural reference as in (3.i) (calling them EPPCs), and the ones in which the plural pronoun has inclusively singular reference as in (3.ii) (calling them IPPCs).[73] The IPPC reading is typically the case with comitative

[73] Note that the term "inclusive" is used here in a technical sense, quite differently from studies of clusivity. In such studies, an "inclusive" plural pronoun like *we* includes the addressee in its extension, while an "exclusive" one does not. In PPCs, however, the inclusive/exclusive distinction pertains to the number feature of the plural pronoun. Thus, the "inclusive" use of *we* actually denotes the singular *I*, whereas its "exclusive" use excludes the singular-only reading, always having a plural reference.

constructions. Thus, (3) is ambiguous as far as the reference of the plural pronoun *biz* 'we' is concerned.

This ambiguity is not specific to first person and is also observed in second (4) and third (5) person plural pronouns.

(4) *Can-'la siz* nerede-y-di-niz?
Can-COM you.PL where-COP-PST-2PL

i. 'Where were *Can and you(PL)*?' (EPPC)
ii. 'Where were *Can and you(SG)*?' (IPPC)

(5) *Can-'la onlar* da birazdan gel-ecek-ler.[74]
Can-COM they too soon come-FUT-3PL

i. '*Can and they*, too, will come soon.' (EPPC)
ii. '*Can and she/he*, too, will come soon.' (IPPC)

Comitative constructions with an inclusive interpretation has been observed in a wide range of languages including Russian (Feldman, 2002; Vassilieva & Larson, 2005), Hungarian (Dékány, 2009), Polish (Vassilieva M. B., 2005), Czech (Škrabalová, 2003), Estonian (Erelt, 2008), as well as Chamorro (an Austronesian language spoken in Guam), Yapese (an Austronesian language spoken in Micronesia), Tzotzil (a Mayan language spoken in Mexico), Maori (a Polynesian language spoken in New Zealand), Tagalog (an Austronesian language spoken in the Philippines), and Mparntwe Arrernte (a Pama-Nyungan language spoken in Australia) (Haspelmath, 2007, p. 33). The simple fact that a plural pronoun can a have a singular reference raises a number of questions for compositional semantics since the plural feature of the pronoun seemingly evaporates at LF. How can this be,

[74] For some yet unknown reason, some native speakers find IPPCs with third person PL pronouns slightly degraded. This is unsurprising, as third person pronouns differ from other pronouns in a number of respects. It has been suggested, for instance, that third person pronouns actually lack a person feature. Whether this has connection with the issue needs further research.

why is this typically the case with pronouns (and sometimes proper nouns) but not with common nouns, and how does it relate to the syntactic expression of Number in general? The relevant question is whether PPCs can be accounted for by appealing to the semantics, and possibly internal structure, of plural pronouns *per se*, or whether they arise as a byproduct of the syntactic configuration they occur in.

Unlike the prevalent assumption in the literature that PPCs are complementation structures, I pursue a different approach and argue that they are actually examples of coordination. Assigning a crosslinguistically uniform semantics to plural pronouns, I develop a structural account of PPCs according to which the plural feature on the plural pronoun is not a feature of the pronoun itself but one of the coordinated DP. The plural pronoun acquires this feature as a result of the movement of the person feature from the higher pronominal conjunct to the coordinated DP. Briefly, the plural pronominal conjunct initially merges as singular and is interpreted as such at LF. The complex coordinated DP, however, always ends up as plural by "adding up" the number features of its conjuncts; but is initially underdetermined as to the person feature. The coordinated DP acquires its person feature from the structurally higher pronominal conjunct through feature-movement, a process known as Close Conjunct Agreement (CCA). Thus, the plural pronoun is located not in the conjunct but in the φ° position of the coordinated DP. The movement operation creates a chain between the pronominal conjunct and the coordinated DP, which ultimately leads to the deletion of the singular pronoun at PF through chain reduction. The major typological split between languages follows from language specific constraints. Apparently, this sort of agreement is obligatorily overt in Russian, optionally so in Turkish, and obligatorily covert in English. I demonstrate

that this line of reasoning successfully predicts a number of otherwise puzzling properties of PPCs that previous models struggle with.

The chapter is organized as follows: Section 6.2 lays down some defining properties of PPCs that this chapter attempts to account for. Section 6.3 reviews earlier proposals, in particular Vassilieva and Larson's (2005), and highlights some major problems associated with these accounts. Section 6.4 develops an agreement-based model of PPCs and demonstrates how it handles the problematic data left unaccounted for under the previous models. Some residual issues are also addressed in Section 6.5.

6.2 Properties of plural pronoun constructions

PPCs have a number of properties that any adequate theory will need to address. This section outlines some of these properties with data drawn primarily from Turkish and Russian; but as occasion arises, I bring in data from other languages that have been reported to allow IPPCs, like Hungarian, Czech, and Polish. Most of the data is taken from Vassilieva and Larson (2005), and Vassilieva (2005).

Optionality:

First, the use of a plural pronoun in IPPCs is optional in Turkish. Thus, all IPPCs have a semantically identical counterpart in which the plural pronoun is replaced with its singular counterpart as in (6).

(6) a. Can-'la {*biz*/*ben*} sinema-ya git-ti-k.[75]
Can-COM we/I cinema-DAT go-PST-1PL
'Can I went to the cinema.'

[75] In all of the examples given in this work, the IPPC occupies the subject position. Nevertheless, they can also occur in the object position.

b. Melda-'yla {*siz*/*sen*} ben-i bekle-yin.
Melda-COM you(PL)/you(SG) I-ACC wait-2PL
'Melda and you(SG) should wait for me here.'

The optionality of a singular pronoun in such constructions, however, seems not to apply cross-linguistically. Feldman (2002) and Vassilieva (2005) report that in Russian, replacing the plural pronoun with its singular counterpart leads to ungrammaticality (7a). Dékány's (2009) data indicate that the same restriction applies in Hungarian (7b). Vassilieva (2005) adds that Czech (7c) and Polish (7d) allow singular pronouns in comitative constructions. Thus, we have cross-linguistic variation, with Turkish patterning with Czech and Polish in that respect.

(7) a. *My*/**Ja* s Dašei kupili komputer. (Russian)
we/I with Dasha bought computer
'Dasha and I bought a computer.'
(Feldman, 2002, p. 21)

b. *Ti*/**Te* Jánossal elutaztok. (Hungarian)
you(PL)/you(SG) John.COM travel.PST.2PL
'John and you(SG) set off on a journey.'
(Dékány, 2009, p. 6)

c. *My*/*já* s Marií jsme šli do kina. (Czech)
we/I with Mary aux.1PL gone.PL.MASC to cinema
'Mary and I went to the cinema.'

d. *My*/*Ja* z *Tomkiem* przylecimy w południe. (Polish)[76]
we/I with Tomek fly.FUT.1PL at noon
'Tomek and I will arrive (by plane) at noon.'
(Vassilieva M. B., 2005, p. 91)

(i) Müdür *Can-'la biz-i* oda-sın-a çağır-dı.
principal Can-COM we-ACC room-3SG.POSS-DAT call-PST
'The principle called Can and me into his room.'

[76] Note however that Polish does not allow two SG pronouns in the comitative phrase. As such, 'Pronoun + with-Pronoun' constructions are ungrammatical.

(i) **Ja z nią* poszliśmy do kina.
I with her went.1pl to cinema
'I went to the movies with her.'
(Vassilieva M. B., 2005, p. 91)

Ambiguity:

Second, PPCs are almost always ambiguous between an exclusive (EPPC) and an inclusive (IPPC) reading. Thus, in both Turkish (8) and Russian (9), the plural pronoun can reference a singular as well as a plural individual.

(8) *Can-'la biz* Dış Ticaret oku-yor-uz.
Can-COM we Foreign Trade study-PRS-1PL
'Can and we/I study Foreign Trade.'

(9) *My s Petej* pojdëm domoj.
we with Peter.INST go-FUT home
'Peter and we/I will go home.'

(Vassilieva & Larson, 2005, p. 101)

Hierarchy:

Third, when two pronouns co-occur in an IPPC, they obey a strict hierarchy, which restricts their combinatorial possibilities. First person pronouns have priority over second person pronouns, which in turn have priority over third person pronouns. These effects are usually explained by Animacy Hierarchy (AH) (Comrie, 1981; Croft, 1988), according to which if a language allows PPCs with a group of nominals, say Kin Terms, it is predicted to allow PPCs with the nominals on the left in (10), e.g. proper nouns, 2nd person pronouns, and 1st person pronouns, but not necessarily the ones on the right.

(10) Animacy Hierarchy
1st person pronoun > 2nd person pronoun > proper nouns > kin terms > rational (human, personal) noun > other animate > inanimate

This effect of AH is exemplified in (11) from Turkish. Vassilieva and Larson (2005, p. 117) report that it applies to Russian PPCs as well.[77]

[77] Note that (11a') and (11b') are odd even under an EPPC reading.

(11) a. *Sen-le* *biz* beraber gid-eceğ-iz.
you(SG)-COM we together go-FUT-1PL
'You(SG) and I will go together.'

a'. **Ben-le siz* beraber gid-eceğ-iz.[78]
I-COM you(PL) together go-FUT-1PL
'I and you(SG) will go together.'

b. *On-la* *siz* burada kal-acak-sınız.
(s)he-COM you(PL) here stay-FUT-2PL
'(S)he and you(SG) will stay here.'

b'. **Sen-le* *on-lar* burada kal-acak-sınız.
you(SG)-COM (s)he-PL here stay-FUT-2PL
'You(SG) and (s)he will stay here.'

As can be predicted from the above hierarchy, when a pronoun co-occurs with a proper noun in Turkish, the pronoun has priority. Dyla and Feldman (2003) report that this applies to Russian IPPCs as well.

(12) *My s Dašei* / **Dasha s* *nami* pokupaem kompjuter. (Russian)
we with Dasha / Dasha with us buy computer
'Dasha and I are buying a computer.'
(Dyla & Feldman, 2003, p. 33)

Regular coordinators:

Fourth, an ordinary coordinator like *and* cannot apparently substitute for the comitative marker. This is surely the case in Russian (Vassilieva & Larson, 2005). Thus, although (13a) can have both IPPC and EPPC readings, (13b) can only have the latter.

(13) a. *My s Petej* znajem nemeckij. (EPPC/IPPC)
we with Peter.INST know.PL German
'Peter and we/I know German.'

[78] Such constructions are grammatical when *siz* 'you(PL)' is interpreted as a second person SG formal address form (V/T difference). But this does not interest us here.

b. *My i Petja* znajem nemeckij. (EPPC/*IPPC)
we and Peter.NOM know.PL German
'Peter and we/*I know German.'

(Vassilieva & Larson, 2005, p. 113)

In Turkish, however, the majority of speakers I consulted judge (14) as grammatical under an IPPC reading. Thus, there is variation between PPC-languages as to whether they allow regular coordinators in IPPCs.

(14) *Can ve biz* geç gel-eceğ-iz.
Can and we late come-FUT-1PL
'Can and we/I will come late.'

Proper nouns:

Fifth, in Turkish, IPPC-like interpretations can also be achieved with two proper nouns, the second of which carry the plural marker *-lAr*. In other words, a plural pronoun is not necessary, suggesting the ubiquity of the underlying process that leads to such an interpretation.

(15) Q: Millet nerede?
people where
'Where is everybody?'

A: Can-'la biz ev-de-yiz.
Can-COM we home-LOC-1PL.

Emre-'yle Melda-'lar da birazdan gel-ecek-ler.[79]
Emre-COM Melda-PL too soon come-FUT-3PL

'Can and I are at home. Emre and Melda will come soon.'

[79] It is important to note that the IPPC reading of *Melda'lar* 'Melda-PL' is different from its associative plural reading, which Vassilieva (2005, pp. 94-95) call "Extended Associatives". In the associative plural reading, *Melda'lar* refers to a group including *Melda*, while in the IPPC reading, *Melda'lar* is simply interpreted as *Melda*, referring to a single person. It is the latter interpretation that is at issue here.

Apparently, such constructions are rather rare cross-linguistically. Neither Vassilieva and Larson (2005) nor Feldman (2002) mention whether such constructions are grammatical in Russian. In Turkish, too, constructions involving two proper nouns are rare. Since proper nouns rank lower in AH than personal pronouns, it is predicted that IPPC-like constructions involving them will have a more restricted distribution cross-linguistically than IPPCs involving personal pronouns.

Directionality:

Lastly, the order of the constituents in a PPC reflects the directionality parameter of a language. If the language is head-initial, pronouns higher in the AH precede the lower ones. The order is reversed if the language is head-final.

(16) {*My s nei* / **Oni so mnoi*} pojom. (Russian, head-initial)
we with her / They with me sing.1PL
'She and I sing.'

(Feldman, 2002, p. 24)

(17) {*Sen-le biz* / **Biz-le sen*} anlaş-abil-ir-iz. (Turkish, head-final)
you(SG)-COM we / we-COM you(SG) collaborate-ABIL-AOR-1PL
'You(SG) and I can collaborate.'

The effect of the directionality parameter can also be observed in the attachment site of the case marker. While in Russian the second conjunct is comitative-marked (see (16)), in Turkish, it is the first one (see (17)). Given that, the above data nicely matches the directionality parameter of either language.

Before closing off this section, I would like to mention that IPPCs are only possible in Turkish with pronouns and proper nouns, not with common nouns. As such, plural common nouns always yield exclusive interpretations. Given AH, it

must be the case that in Turkish only nominals down to and including Kin Terms can participate in IPPCs.

(18) Can-'la *öğrenci-ler* sen-i sor-du-lar. (EPPC/*IPPC)
Can-COM student-PL you(SG)-ACC ask-PST-3PL
'Can and the students/*the student asked after you(SG).'

In this section, I laid down some properties of IPPCs that set them apart from similar constructions. The success of a theory of PPCs, I believe, should be judged by how well it accounts for these properties.

6.3 Earlier analyses

6.3.1 The saturation account

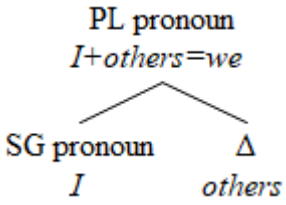
The literature on IPPCs is rather scarce. Perhaps one of the most developed analyses comes from Vassilieva & Larson's (2005) (V&L). V&L develop an account of Russian IPPCs based on a specific semantics for plural pronouns that they adopt. In their view, plural pronouns have the semantics in (19).

(19) a. we = $I + \Delta$
b. you(PL) = you(SG) + Δ
c. they = he/she/it + Δ

In this system, plural personal pronouns are derived from their singular counterparts by the insertion of Δ, which corresponds to the associates of the plural pronoun. Thus, *we* corresponds to "I + others", where others represent the individuals associated with *I*. This amounts to saying that plural pronouns contain an "unsaturated" element in their denotation, which must be specified for the plural pronoun to be able to refer. On the syntactic side, V&L claim that the singular

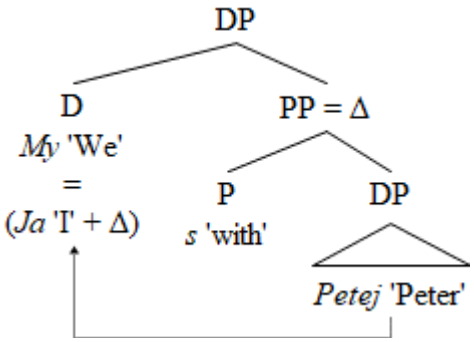
pronoun takes Δ as a complement, as schematically represented in (20). As a result, the reference of Δ always ends up being included in the reference of the plural pronoun.

(20) Plural pronouns



They further argue that IPPCs are precisely the instantiation of the structure in (20), where the comitative marked DP merges in the complement Δ position of the plural pronoun as in (21).

(21) My s Petej
we with Peter
'Peter and I'



V&L go on to claim that several properties of IPPCs follow naturally from their account, and provide the following pieces of evidence in favor of their analysis.

Maximally one conjunct:

The first piece of evidence comes from the ban on multiple comitative DPs occurring as complements of the plural pronoun. In Russian IPPCs, no more than one comitative DP can function as the complement of D°.

(22) *My [s Petej] [s Ivanom] pojdëm domoj.
we with Peter.INST with Ivan.INST go.FUT home
'[Ivan and [Peter and I]] will go home.'
(Vassilieva & Larson, 2005, p. 117)

In V&L's analysis, this is because the open variable in the Δ of the plural pronoun, once saturated by a comitative DP, resists further DPs.

Iterative IPPCs:

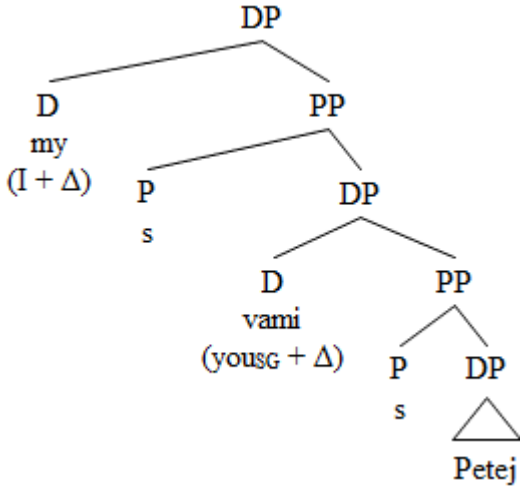
The second piece of evidence V&L adduce in favor of their analysis is the iterability of plural pronouns in Russian IPPCs.

(23) My s [vami s Petej] pojdëm domoj.[80]
we with you(PL).INST with Peter.INST go.1PL.FUT home.
'[I + [you(SG) + Peter]] will go home.'
(Vassilieva & Larson, 2005, p. 117)

These examples illustrate recursive IPPCs, where each comitative DP acts as a complement of the preceding plural pronoun. As such, both plural pronouns receive a singular interpretation, and the construction as a whole refers to a total of three individuals. (24) gives the derivation of (23).

[80] V&L state in a footnote that iterative IPPCs are "perceived as cumbersome (although grammatical) by Russian speakers (Vassilieva & Larson, p. 117)".

(24) My [s [vami [s Petej]]] pojdëm domoj.



Morphological evidence:

The third piece of evidence V&L discuss is that, in Vietnamese, plural pronouns are derived from their singular counterparts by the addition of *chúng*, meaning 'people' (see (25a-c)). Likewise, Melanesian Pidgin attaches *-fela* 'fellow' to singular pronouns to form their plurals (see (25d-f)).

(25)

a. tao 'I'	chúng tao 'we'	(Vietnamese)
b. mày 'you(SG)'	chúng mày 'you(PL)'	
c. nó 'he/she/it'	chúng nó 'they'	
d. mi 'I'	mi-fela 'we'	(Melanesian Pidgin)
e. yu 'you(SG)'	yu-fela 'you(PL)'	
f. him 'he'	him-fela 'they'	

V&L argue that the forms *chúng* and *-fela* occupy the Δ position, which they take to strongly support their analysis.

No IPPCs with regular coordinators:

Further, since the comitative DP is a complement of the plural pronoun, V&L's account predicts that IPPCs should be ungrammatical with *and*-coordination. This is

because it is assumed that each conjunct of an *and*-coordination has equal status. This prediction is borne out in Russian.[81]

(26) a. *My s Petej* znajem nemeckij.
we with Peter.INST know.PL German
'Peter and we/I know German.'

b. *My i Petja* znajem nemeckij.
we and Peter.NOM know.PL German
'Peter and we/*I know German.'

(Vassilieva & Larson, 2005, p. 113)

Conjunct order:

The last piece of evidence V&L discuss is the observation that, unlike regular coordination, the order of the conjuncts in IPPCs is not interchangeable.

(27) a. *My s Petej* tancevali.
we with Peter.INST danced.PL
'Peter and I danced.'

b. **Petja s nami* tancevali.
Peter.NOM with us.INST danced.PL
'Peter and I danced.'

(Vassilieva & Larson, 2005, p. 114)

V&L argue that their analysis predicts such a restriction. Since the plural pronoun and the comitative DP are in a complementation relation, their places cannot be swapped.

6.3.2 Other accounts

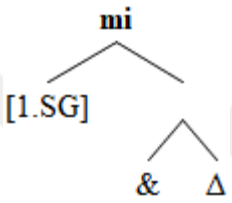
Feldman (2002) develops an account of IPPCs framed in HPSG, according to which plural pronouns are transitive. Thus, a transitive plural pronoun always requires a

[81] Such constructions, however, are grammatical in Turkish (see Section 6.2). I argue in Section 6.3.3 that this is in fact one of the weaknesses of V&L's account.

with-DP to complete its meaning. Crucially for us, Feldman (2002) assumes that in IPPCs, the denotation of the comitative DP is included in the that of the plural pronoun. Since I will shortly be arguing against such an account, I leave it here.

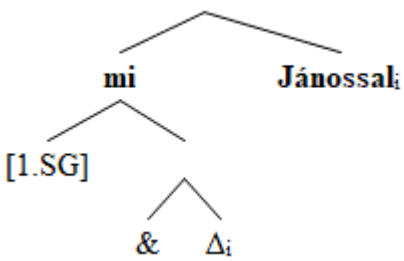
Another work on IPPCs is Dékány's (2009), who follows V&L in assuming that plural pronouns are formed from their singular counterparts. The difference is that plural pronouns are lexically specified to include Δ in their denotation. Dékány (2009) assumes the structure of the Russian plural pronoun *mi* 'we' to be as in (28).

(28) mi 'we' (Regular PL pronoun)



Like V&L, Dékány (2009) assumes that the Δ in the complement position of the plural pronoun must be saturated for its meaning to be complete. But unlike V&L, she proposes, in line with Schwartz (1988), Ladusaw (1988), and McNally (1993), that this is done not by merging the comitative DP into the position of Δ, but rather by right-adjoining it above the plural pronoun, where it can bind the open variable provided by Δ.

(29) mi Jánossal (PL pronoun in IPPC)
we John.COM
'John and I'



There is thus disagreement about the attachment site of the comitative DP: V&L argue that it merges in the position of Δ, while Dékány (2009) argues that it merges outside the DP. What Vassilieva and Larson (2005), Feldman (2002), and Dékány (2009) have in common is the assumption that IPPCs result from the semantics of plural pronouns.

6.3.3 Problems with earlier accounts

In this section, I discuss some data that challenges V&L's account. Since all the other proposals share with V&L the idea that IPPCs directly result from the semantics of plural pronouns, most of these challenges are detrimental to them as well. For further counterarguments against the adjunction analysis in particular, see Škrabalová (2003), who proposes, like I do, that PPCs are coordination structures.

6.3.3.1 IPPCs with regular coordinators

Recall from Section 6.3.1 that Russian IPPCs cannot be formed with regular coordinators like *and*. Consider V&L's example in (30) repeated from (26b).

(30) *My i Petja* znajem nemeckij
we and Peter.NOM know.PL German
'Peter and we/*I know German.'

They argue that, since the comitative DP is a complement of the plural pronoun in their analysis, and since conjuncts of a coordination do not stand in a complementation relation, it follows that the regular coordinator *and* cannot replace *with*. But recall from Section 6.2 that exactly such a construction is possible in Turkish. Compare the IPPC in (31a) to its semantically identical coordination counterpart in (31b).

(31) a. *Can'la biz* alışveriş-e gid-iyor-uz. (Turkish)
Can.COM we shopping-DAT go-PRS-1PL
'Can and I are going shopping.'

b. *Can ve biz* alışveriş-e gid-iyor-uz.[82]
Can and we shopping-DAT go-PRS-1PL
'Can and I are going shopping.'

Thus, V&L's account wrongly predicts (31b) to be ungrammatical.

6.3.3.2 IPPCs with proper nouns

Another set of data challenging V&L's account comes from IPPC-like constructions involving two proper nouns, instead of two pronouns or a pronoun and a proper noun. In V&L, it is predicted that at least one conjunct must be a plural pronoun. We have seen in Section 6.2, however, that in Turkish, inclusive readings can also be achieved with two proper nouns, where the second one carries the plural morpheme *-lAr*.

(32) Q: Millet nerede?
people where
'Where is everybody?'

A: Biz gid-iyor-uz; *Emre-'yle Can-'lar* da birazdan gel-ecek-ler.[83]
we go-IMPF-1PL Emre-COM Can-PL too soon come-FUT-3PL
'We are going; Emre and Can will come soon.'

[82] Note that, for reasons not quite clear to me, the grammaticality of this sentence under the IPPC reading is subject to idiolectal variation.

[83] Note in the passing that in (32), *Can'lar* 'Can-PL' can also have an associative reading. In Turkish, the PL marker *-lAr* can be used with proper nouns as well as some kinship terms "to produce an expression referring to the group normally associated with that person" (Göksel & Kerslake, Turkish: A comprehensive grammar, 2005).

(i) *Ahmet-'ler* gel-me-di.
Ahmet-PL come-NEG-PST
'Ahmet and his associates (family/friends/group) did not come.'

Importantly, *Melda'yla Can'lar* in (32) can mean '*Melda and Can* + *Can's associates*' as well as '*Melda and Can*'. In the latter case, it receives an IPPC reading which interests us here.

The significance of such constructions for our purposes is this: In V&L's account, the comitative DP *Emre'yle* 'with Emre' only serves to satisfy the Δ variable provided by the plural pronoun. In (32), however, there simply is no plural pronoun; instead, a plural-marked proper noun is used inclusively. The very fact that such constructions are possible causes V&L's account to lose much of its ground because they clearly demonstrate that IPPC-like inclusive readings are possible even in the absence of a plural pronoun. This suggests that the comitative DP may not function as a Δ-binder, contra V&L.

6.3.3.3 Ambiguity

Further, recall that PPCs are ambiguous between IPPC and EPPC readings. None of the above analyses offer an explanation as to why and how this happens. In V&L, this is because the reference of the complex DP is not derived compositionally by adding up the conjuncts. Rather, the pronoun is plural in both cases, and the comitative DP specifies part of its denotation. This gives us a puzzle. If *we* refers to "I + others", with the comitative DP specifying who the "others" are, we would predict it to be iterable, with each comitative DP specifying who else is involved. But this is clearly not the case. If, however, we were to hypothesize that *we* refers to "we + some other singular individual", that would be a deadly move for the semantics of plural pronouns since *we* does actually mean "I + others" elsewhere (cf. *we = Bill, John, and I*).

The bare fact is this: The ambiguity involving IPPCs is not related to the denotation of the comitative DP, but to that of the plural pronoun. Its reference is ambiguous between singular or plural, corresponding to the IPPC and EPPC readings

respectively; but crucially, this is only the case in comitative constructions, suggesting that the issue is structural rather than semantic or lexical.

6.3.3.4 Semantics of plural pronouns

Another problem that needs to be addressed, which V&L are aware of, is the semantics of non-comitative-marked plural pronouns. Note that, outside IPPCs, plural pronouns have a strictly plural reference, and, more importantly, do not need to take a comitative DP. As V&L themselves note, it must either be the case that bare plural pronouns have a covert comitative DP in their specification, or some other explanation must be found. An alternative analysis would be to hypothesize that comitative DPs are required to saturate the variable of the plural pronoun *only* in IPPCs. However, this amounts to saying that the issue is to do with the structure of IPPCs rather than the semantics of plural pronouns. This causes V&L's account to lose its force.

Next, consider constructions involving a PL pronoun and an NP, as in (33).

(33) we linguists

Assuming with Baltin (2012) that all pro-forms are "functional categories with a deleted complement (p. 4)", it can be argued that in (33), *we* occupies D° while *linguists* sits in N°, specifying who the plural pronoun references. In such constructions, the deleted complement of the pronoun need not be specified. Equivalents of (33) are also possible in Turkish. But crucially, (34a) is not semantically equivalent to the IPPC in (34b).

(34) a. biz dilbilimci-ler (non-IPPC)
we linguist-PL
'we linguists'

b. dilbilimci-ler*(-le) biz (IPPC)
linguist-PL-COM we
'the linguists and I'

V&L's account would wrongly assign identical syntactic representations to (34a) and (34b), which have rather different interpretations. The contrast is further sharpened by the fact that while IPPCs like (34b) require (i) a *with*-DP, and (ii) the DP be comitative-marked, constructions like (34a) (i) do not require a DP, and (ii) reject comitative-marking.

6.3.3.5 Crosslinguistic variation

Since V&L's account relies crucially on the semantics of plural pronouns in general, it becomes a mystery why IPPCs are absent in a considerable number of languages, including English. Consider how it works. V&L propose that plural pronouns are in some sense incomplete until the variable provided by Δ is bound by some DP. But the fact that English lacks IPPCs begs the question why. We simply would not wish to claim that English *we* has different semantics from its Turkish counterpart *biz*, or the Russian *my*, as it would have insurmountable consequences for the universality of semantics.

Thus, we are in need of a theory with more cross-linguistic coverage, one which sees the source of crosslinguistic variation in syntactic structure and relevant language-specific constraints rather than semantics of plural pronouns. In what follows, I develop exactly such an account of IPPCs within the framework of Sauerland's (2003) φP account of Number marking introduced in Section 5.2.3, and demonstrate that, beside accounting for many of the properties of PPCs listed in Section 6.2, it also successfully predicts some other intriguing properties of IPPCs.

6.4 An agreement-based model

This section develops a structural account of PPCs according to which the plural feature on the plural pronoun is not a feature of the pronoun itself but one of the coordinated DP. The plural pronoun acquires this feature as a result of the movement of the person feature from the higher pronominal conjunct to the coordinated DP. Briefly, the plural pronominal conjunct initially merges as singular and is interpreted as such at LF. The complex coordinated DP, however, always ends up as plural by "adding up" the number features of its conjuncts, but is initially underdetermined as to the person feature. The coordinated DP acquires its person feature from the structurally higher pronominal conjunct through movement, a process known as Close Conjunct Agreement (CCA). Thus, the plural pronoun is located not in the conjunct but in the φ° position of the coordinated DP. The movement operation creates a chain between the pronominal conjunct and the coordinated DP, which ultimately leads to the deletion of the singular pronoun at PF through chain reduction.

6.4.1 Background assumptions

6.4.1.1 DP-internal φ-features

Recall that the issue surrounding PPCs revolves around the number feature of plural pronouns, which fails to receive an interpretation in IPPCs. Given that Number is a φ-feature, I wish to clarify the theory of φ-features assumed in the upcoming analysis.

The problem of φ-features brings up at least two independent but interrelated issues. On the nominal side, there is the issue of how φ-features are organized DP-internally; and on the clausal side, how they affect syntactic processes DP-externally.

These questions are particularly important if an overarching theory of φ-features and the concomitant φ-feature agreement is desired. With his Φ-Completeness Condition, Chomsky (2000; 2001a) proposes that, in order for Agree to succeed, the node that acts as a probe must be φ-complete (fully specified for Person, Number, and Gender). This view, tacitly assumed in analyses of agreement, takes φ-features to be a bundle that acts as a single atomic unit for the purpose of clausal agreement. Richards (2007) further argues that the TP must inherit φ-features from the CP or else the derivation crashes at the relevant phase, thereby reducing feature-inheritance to Phase Impenetrability Condition. The gist of these proposals is that φ-features of DPs are treated as a single unit in DP-external, i.e. clausal, agreement operations.

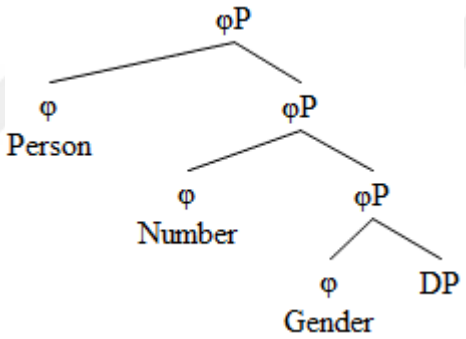
On the nominal side, however, a growing body of literature has established that φ-features are scattered across the nominal spine, forming a hierarchical order rather than a flat bundle. Ritter (1993), for instance, demonstrates that Gender features originate on N° or Class°, while Number features originate on Num° (Ritter, 1991; 1992). Person features, on the other hand, have been argued to occupy D° in Bernstein (2008) and Longobardi (2008). Thus, the way φ-features are viewed in the nominal vs clausal domains stand diametrically opposed: scattered within the DP, and bundled outside of it. This state of affairs also has repercussions for the process of feature valuation. To remedy the problem, Danon (2011) and Inokuma (2013) make two interesting proposals. The first one is that we should not delete valued φ-features, but let them remain visible for further operations of Agree. This way, features already valued DP-internally are still available for agreement in the clausal domain. The second one is that there must be a mechanism which accesses the scattered φ-features in the nominal spine, collects them above the DP, and thus

makes them available for clausal agreement as a feature bundle. Such a process is required for the Φ-Completeness Condition to have any hope of survival.

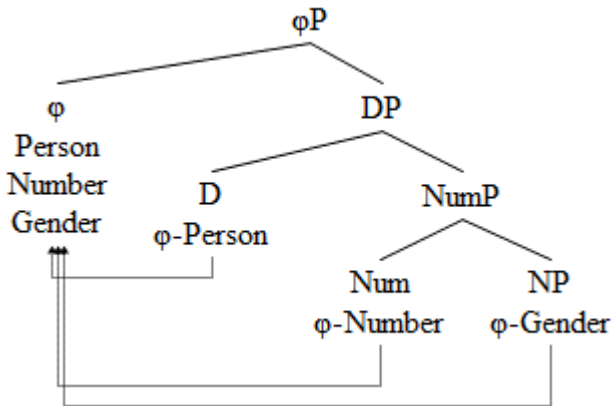
A thorough discussion of φ-feature organization and φ-agreement would take us too far afield. Suffice it to say at this point that, crucially for the present purposes, φ-features are hierarchically organized within the DP, with the Person feature ranking higher than Number, which in turn is higher than Gender. More importantly, each φ-feature is independently accessible for agreement processes. I therefore assume the structured representation in (35a) for φ-feature organization, but something akin to (35b), proposed in Inokuma (2013) would also do just fine.

(35) Structure of ΦP

a. Hierarchical



b. Bundled



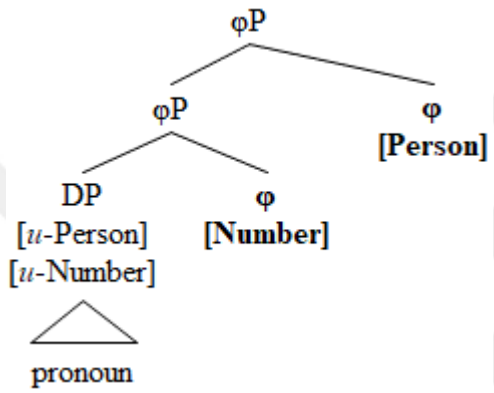
For reasons of simplicity, I will disregard Gender in the ensuing discussion. As we will see shortly, the assumption that φ-features are ordered and independently

accessible for syntactic operations is indeed necessary to account for the properties of PPCs.

6.4.1.2 Morphosyntax of pronouns

In accordance with Sauerland's (2003) account reviewed in Section 5.2.3, I assume that Turkish pronouns have the following structure uniformly.

(36) Structure of pronouns[84]



This means that pronouns enter the derivation already carrying uninterpretable φ-features, which must match the feature specification on φ°, an instance of agreement. It is through this agreement that they are licensed.

I further assume with Sauerland (2003) that all DPs project to a φP. This is independently required to account for languages in which verbs also agree with objects.

6.4.1.3 Morphosyntax of comitative coordination

Ross (1967) first observed that conjuncts of coordination stand in an asymmetric relation: The second conjunct forms a constituent with the conjunction to the

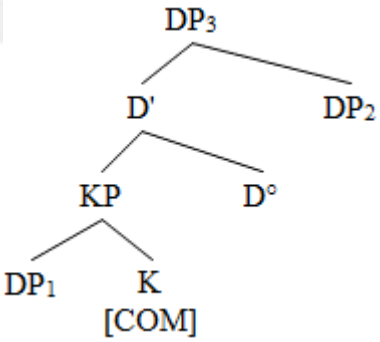
[84] Baggaley (1998) argues similarly that 3PL *on-lar* spells out D+φ. Given that the PL suffix *-lAr* is isolable in this case, this is a plausible assumption.

exclusion of the first conjunct, but not vice versa. Ever since, the literature on the syntax of coordination grew in size, with radically diverging proposals (Collins, 1988a; Collins, 1988b; Munn, 1993; Kayne, 1994; Zoerner, 1995; Camacho, 1997). Two lines of analyses emerged: (i) the conjunct-as-the-head camp, which maintain that the head of coordination is occupied by one of the conjuncts and that the conjunction spells out some feature, and (ii) the conjunction-as-the-head camp, which maintain that coordination is headed by the conjunction that takes conjuncts as complements/specifiers/adjuncts. Progovac (1998) gives a sufficiently detailed overview of these proposals.

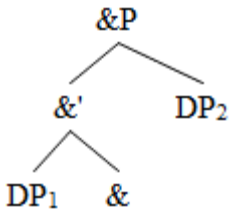
Pending the discussion, I assume that a Comitative Coordination (CC) has the structure in (37a), not the usually assumed one in (37b).

(37) Structure of a CC

a.



b.

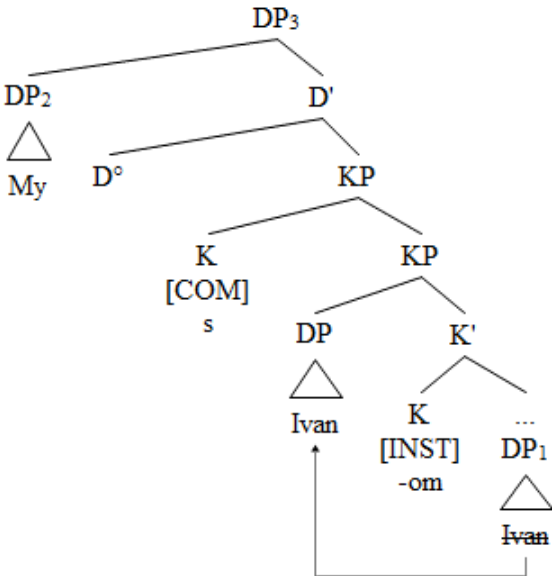


The reasons for rejecting (37b) is two-fold. First, as Sauerland (2003) notes, φPs must select for a DP, not an &P. Second, as Zhang (2010) demonstrates, (most) &Ps have no categorial features and thus no selectional restrictions on their conjuncts. Therefore, coordinate constructions always inherit their categorial properties from one of their conjuncts (usually the higher one in the Spec position). Thus, Zhang (2010) concludes, there is no &P in syntax.

(37a) makes it clear that a CC involves two DPs, not two NPs. This is a welcome result since comitative is a case marker, and case is typically associated with DPs. The DP analysis also captures some properties of CCs that I outline below. A typical CC is itself a complex DP (DP_3), consisting of two DPs, occupying the complement (DP_1) and specifier (DP_2) positions. DP_1 is comitative-marked by D°. Such a mechanism is not unprecedented in the literature. Škrabalová (2003), in particular, argues that the PPCs involve a null coordinator head in Czech which assigns comitative case to its complement DP_1, while Zhang (2007, p. 152) proposes a similar structure to (37a) for comitative coordination in English in which the D° of the complex DP is headed by *with* carrying the features [D, PL, Case assigning]. For analyses proposing that one conjunct is case-marked by the conjunction head, see also Progovac (1998). For languages like Russian in which DP_1 is introduced by preposition, I assume with Caha (2009) that comitative case is jointly spelled out by *s* 'with' and the instrumental suffix *-om* as in (38) (cf. Caha's (2009) Split K analysis), but nothing about my argument depends strictly on that assumption.

(38) Russian CC

My s Ivanom
we with Ivan.INST 'Ivan and I'



The assumption that CCs are unlike regular coordinate constructions is motivated by a number of differences, most of which have long been noted. First, unlike the true coordinator *ve* 'and', the comitative *ile* 'with' can only coordinate DPs.

(39) a. with DPs

Can ve/ile Melda burada-lar.
Can and/with Melda here-3PL
'Can and Melda are here.'

b. with VPs

Can ödevi yaptı ve/*ile gönderdi.
Can assignment did and/with sent
'Can did and sent the assignment.'

Because of this, *ile* and *ve* give rise to different entailments when the nominals they coordinate are modified by possessor phrases.

(40) a. Can-'ın *ortağ-ı* *ve* *en* *yakın arkadaş-ı* öldü.
Can-GEN partner-POSS and most close friend-POSS died
'Can's [partner and close friend] died.'

i. Only one person died. = [$_{DP}$ Can's [$_{NP}$ partner and close friend]]
ii. Two persons died. = [$_{DP}$ Can's partner] and [$_{DP}$ Can's close friend]

b. Can-'ın *ortağ-ı* *ile* *en* *yakın arkadaş-ı* öldü.
Can-GEN partner-POSS with most close friend-POSS died
'Can's partner and close friend died.'

i. *Only one person died. = [$_{DP}$ Can's [$_{NP}$ partner and close friend]]
ii. Two persons died. = [$_{DP}$ Can's partner] and [$_{DP}$ Can's close friend]

Second, unlike *ve*, *ile* cannot be iterative.

(41) a. Can ve Melda ve Ozan
Can and Melda and Ozan
'Can and Melda and Ozan'

b. *Can ile Melda ile Ozan
Can with Melda with Ozan
'Can and Melda and Ozan'

Third, *ile* cannot be attached to case-marked DPs while *ve* can.

(42) Hoca Can-'ı ve/*ile Melda'-yı odasına çağırdı.
teacher Can-ACC and/with Melda-ACC to.his.room called
'The teacher called Can and Melda into his/her room.'

Last but not least, *ile*-phrases may serve as secondary predicates while *ve*-phrases cannot.

(43) a. Can Melda'-yla Ömer-'i ziyaret etti.
Can Melda-COM Ömer-ACC visit did

i. 'Can visited Melda and Ömer.' (*ile* as coordinator)
ii. 'Can visited Ömer with Melda.' (*ile*P as secondary predicate)

(44) a. Can Melda ve Ömer-'i ziyaret etti.
Can Melda and Ömer-ACC visit did

i. 'Can visited Melda and Ömer.' (*ve* as coordinator)
ii. '*Can visited Ömer with Melda.' (*ve*P as secondary predicate)

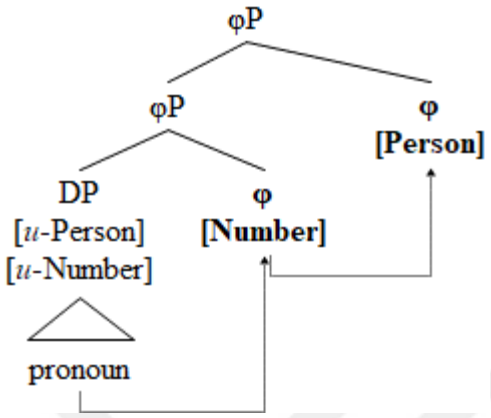
There are other differences between the true coordinator *ve* 'and' and the comitative marker *ile* 'with' which I leave out for reasons of space. I assume that *ile* is a case marker morpho-syntactically, and that its coordinating function follows from its semantics.

6.4.2 Structure of Plural Pronoun Constructions

In this section, I outline an account with a broader empirical coverage than the previous analyses which does not make unwarranted assumptions regarding the semantics of pronouns. I assume, with Sauerland (2003), that φ-features, specifically Number, are only interpreted in φ°, and that φ-features of D° undergo agreement with those of φ°. I propose that this agreement is done in Turkish via movement of

the pronoun from D to each φ-head, checking off its relevant uninterpretable features at each φ-head.

(45) D°-to-φ° movement



Note crucially that although lexical elements like pronouns and proper nouns enter the derivation with their φ-features fully specified, this is not the case with a coordinated DP. Instead, a coordinated DP must acquire its φ-features from its conjuncts. Nevertheless, the acquisition of Number features is quite different from the acquisition of Person/Gender features in at least two important respects. First, the coordinated DP cannot simply copy Number from one conjunct; it must instead compute Number by "adding up" the Number features of its conjuncts. Person and Gender features, on the other hand, cannot be computed by addition of some other mechanism, but simply copied from one of the conjuncts.

Recall that a CC is a complex DP containing two DPs, and that the structurally higher pronominal conjunct (DP_2) occupies the Spec position of the complex DP. Theoretically, this pronominal DP_2 can be singular or plural, giving rise to IPPC and EPPC readings respectively; but irrespective of its number features, the coordinated DP is always plural, since it contains minimally two conjunct DPs. The Number feature of every DP is read off its respective φ_{number}°. Thus, in a CC, the pronominal DP_2 may be singular or plural, but the complex DP_3 is always plural. The

Person feature of the complex DP_3, on the other hand, is copied from the structurally higher pronominal DP_2. Once the coordinated DP_3 acquires all of its φ-features, agreement is established, and the DP can now be spelled out at PF.

Consider how the system works. In an EPPC like *Can'la biz* 'Can and I', the comitative DP *Can'la* 'with Can' is singular and the pronominal DP *biz* 'we' is plural. When computed, the Number of these two conjuncts reference minimum three individuals.[85] Since the coordinated DP copies its Person feature from *biz*; it ends up with features [Person:1, Number:PL]. In IPPCs, however, both the comitative and the pronominal DPs are singular (the pronoun is actually *ben* 'I', not *biz* 'we'), which reference two individuals in the coordinated DP when Number is computed. But recall that D elements must raise to each φ-head to check its uninterpretable features. I propose that this is exactly what happens in IPPCs: The singular pronoun *ben* 'I' occupying DP_2 first raises to $\varphi_{number2}$ and $\varphi_{person2}$, where it checks its uninterpretable Number and Person features. Subsequently, the Person feature of this pronoun, which is [Person:1], raises and adjoins to the $\varphi_{person3}$ of the coordinated DP_3. At this point, the coordinated DP_3 has acquired all of its φ-features: [Person:1, Number:PL], which is identical to the EPPC version. The copy/movement operation creates a partial chain between φ_2 and φ_3 heads, which ultimately leads to the deletion of the singular first-person pronoun *ben* 'I' at PF. In DP_3, however, [Person:1, Number:PL] features are eventually spelled out as *biz* 'we'. This movement, I assume, is partly motivated by the need to make the φ-features of the complex DP_3 PF-visible.

[85] According to Sauerland (2003), the semantic contribution of φ one of presupposition. In particular, singular comes with a strong atomicity presupposition while plural has no such presupposition at all. In other words, plural is semantically empty. Therefore, computing the number of φ_3 by adding up the number of the conjuncts (which would yield a plural) should have no semantic effect, contrary to what I propose. Nevertheless, plurals of Turkish always receive exclusively plural interpretations and are never interpreted number-neutrally (see Section 1.4.2), and thus cannot be handled under Sauerland's (2003) model. I am aware of the questions raised by assuming Sauerland's (2003) analysis, and have no straight forward answer. I hope to address the issue in a future work.

However, since the number feature of DP_2 is read off φ_2, the pronominal conjunct of an IPPC always has singular reference despite ending up in plural form in φ_3. It follows then that plural pronouns in CCs are always ambiguous concerning the reference of the pronoun: (i) either the pronoun itself is plural in its merge position (φ_2), or (ii) the pronoun merges singular but raises to make the φ-features of the complex coordinated DP visible, eventually surfacing as plural in φ_3.

Let me illustrate this with examples. Consider (46), which has both EPPC and IPPC readings.

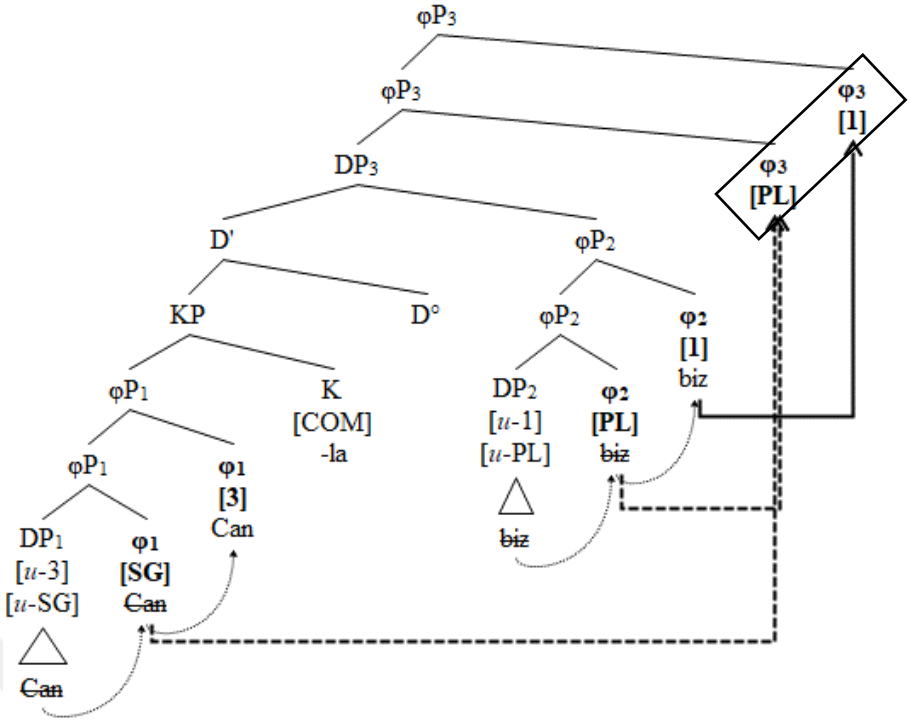
(46) *Can-'la* *biz* iyi anlaş-ıyor-uz.
Can-COM we well get.along-PRS-1PL

i. '*Can and we* get along well.' (EPPC)
ii. '*Can and I* get along well' (IPPC)

I propose that the EPPC reading has the representation in (47) (broken straight lines indicate Number computation, solid straight lines indicate Person feature movement, and the boxed area indicate the resulting φ-feature set that Spell-out targets).

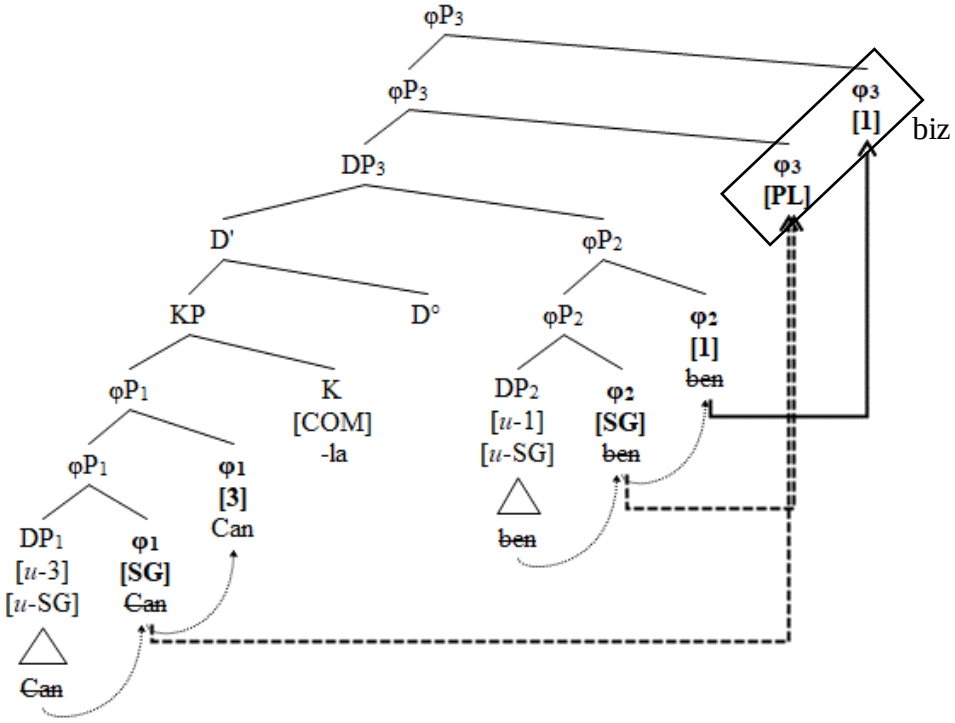
Here, the complement DP_1 *Can* is case-marked by D°. The DP_2 *biz* 'we' is base-generated with [*u*-Person:1, *u*-Number:PL] features, and first undergoes agreement with relevant φ_2 heads. Because $\varphi_{number2}$ is plural and $\varphi_{person2}$ is first-person, DP_2 is semantically interpreted as first-person plural. DP_3 computes Number features of DP_1 and DP_2, obtaining [Number:PL] and copies its Person feature from DP_2, obtaining [Person:1]. The resulting coordinated DP_3 now references at least three people, hence the EPPC reading.

(47) Can-'la biz iyi anlaş-ıyor-uz. (EPPC)



What about the IPPC reading of (46), which references only two individuals? I propose that it has the following representation.

(48) Can-'la biz iyi anlaş-ıyor-uz. (IPPC)

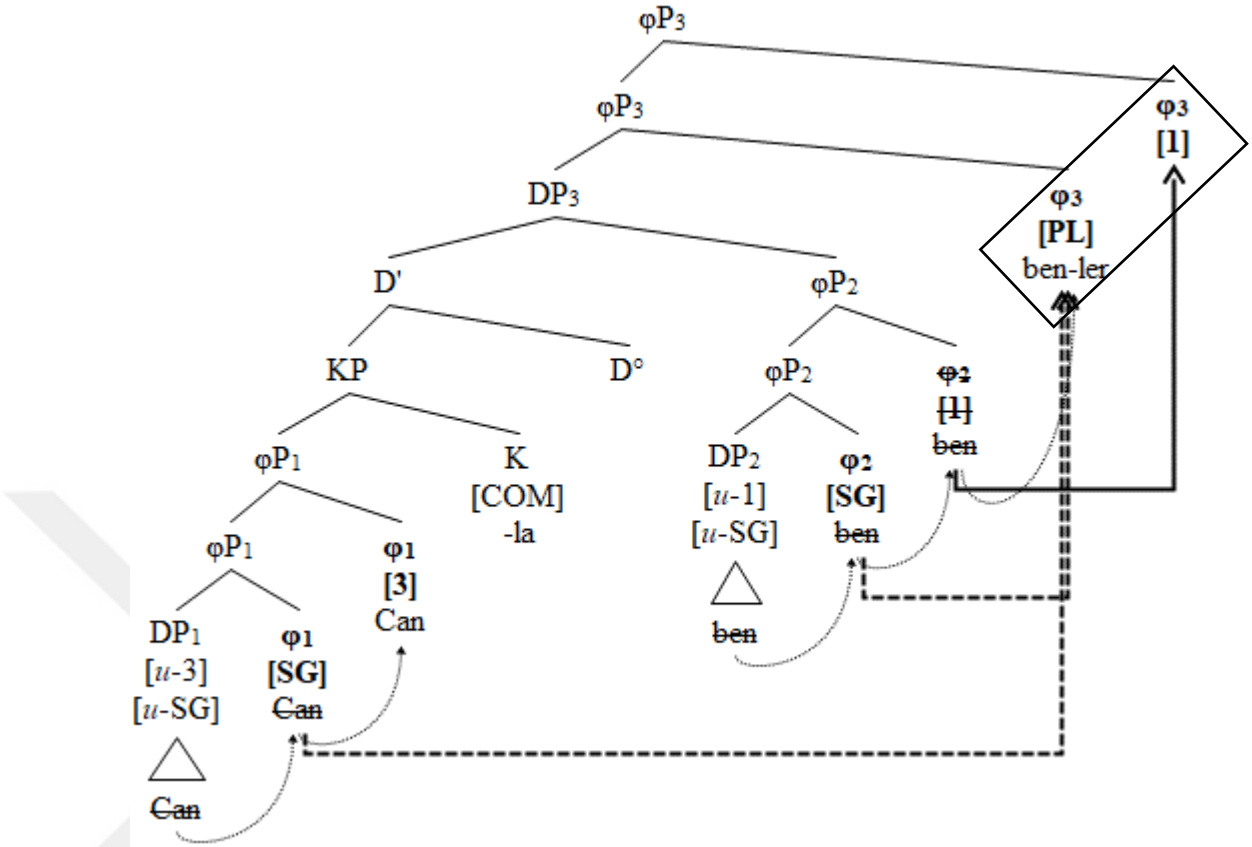


Here, *ben* 'I' is base-generated as first-person singular and raises to $\varphi_{number2}$ and $\varphi_{person2}$ for agreement. The complex DP_3, however, has ends up with plural Number by adding up the numbers of its conjuncts. Since the Person feature of this coordinated DP_3 is first-person, it must have copied it from the pronoun *ben* 'I'. Given its and [Person:1, Number:PL] features, DP_3 is eventually spelled out as *biz* 'we' at PF. Due to the presence of this partial chain between $\varphi_{person2}$ and $\varphi_{person3}$ due to the movement of Person feature, *ben* 'I' in φ_2 is deleted at PF, leaving us with the plural pronoun *biz* 'we' in φ_3. Note crucially that the plural feature on φ_3 is not a feature of *ben*, but a feature of the coordinated DP *Can'la ben* 'Can and I'. Since the number feature of *ben* is read off φ_2 where it is singular, we get an IPPC reading in which two people are involved.

Potential problems:

One might ask at this conjuncture why (49) is ungrammatical under an IPPC reading. Here, *ben* first raises to φ_2 heads for agreement, and then to φ_3, picking up its plural morphology *-ler* and eventually surfacing as the ungrammatical form *ben-ler* 'I-PL'. I propose that this is a post-syntactic issue that can be explained on independent grounds, through a condition called Synonymy Blocking. It has been long noticed that at lexical insertion, given two phonological forms that yield identical semantics, the one with fewer isolable morphemes wins. Thus, the morphologically simplex *biz* blocks its morphologically complex counterpart **ben-ler* 'I-PL' at lexical insertion.

(49) *Can-'la *ben-ler* iyi anlaş-ıyor-uz.
Can-COM I-PL well get.along-PRS-1PL
'Can and I get along well.'



Another question is why the plural pronoun *biz* in (47) does not raise to φ3, surfacing as *biz-ler* 'we-PL'. This, too can be explained by post-syntactic mechanisms. In brief, I propose that the raising actually takes place, but that PF constraints against stacking of identical morphemes, optionally deleting the second instance of plural. Optionally because I demonstrate in Section 6.4.3 that such constructions do exist, and argue that they actually lend support to my analysis.

To recap, despite surface similarity, the pronoun is merged with a plural feature in the EPPC version while it is merged with a singular feature in the IPPC version, and they are interpreted accordingly. However, due to the raising of the Person feature of the pronominal conjunct and the ensuing copy chain, both

constructions receive identical surface forms. This gives a principled account for the derivation of an IPPC, as well as the ambiguity involved in such constructions.

6.4.3 Derivation of Plural Pronoun Constructions

In the preceding section, I sketched out my agreement-motivated raising analysis and also demonstrated how the ambiguity arises in such constructions. In what follows, I illustrate some other properties IPPCs that naturally follow from the analysis proposed.

6.4.3.1 Capturing the properties

Optionality of the PL pronoun:

I stated in Section 6.2 that in all IPPCs in Turkish, the plural pronoun can be replaced by its singular counterpart, leading to identical semantics. The relevant example is repeated below.

(50) Can-'la *ben/biz* sinema-ya git-ti-k.
Can-COM I/we cinema-DAT go-PST-1PL
'Can I went to the cinema.'

My proposal actually predicts such an optionality. Consider why. The raising of the singular pronoun is an instance of feature agreement, hence not semantically motivated. The movement just serves the purpose of making the Person and Number features of φ_3 visible at PF. Lacking a semantic basis, such agreement operations can be overt or covert in languages. In Turkish, the overt movement for agreement is optional and patterns in a sense with plural agreement on the verb when the subject is third person plural, which is also optional. In Russian, however, it is not.

(51) *My*/**Ja* s Dašei kupili komputer.
we/I with Dasha bought computer
'Dasha and I bought a computer.'

(Feldman, 2002, p. 21)

Apparently, Russian (much like Hungarian) requires the agreement to be overt. I suggest that whether or not φ-agreement should be overt is governed by language-specific constraints.

IPPCs with regular coordinators:

It was mentioned in Section 6.2 that Turkish IPPCs are also possible with the regular coordinator *ve* 'and'.

(52) *Can ve biz* geç gel-eceğ-iz.
Can and we late come-FUT-1PL
'Can and we/I will come late.'

In Russian, this is apparently impossible. I will have nothing to say on why it is not available in Russian, but the very fact that it is possible in Turkish poses a challenge for V&L's account. Pending further research, I tentatively suggest that it may be due to a variation in movement constraints employed in both languages. More specifically, it may be that Turkish marginally allows movement out of coordinate constructions (53a) while Russian does not (53b).

(53) a. *Can ile/ve kim* beraber çalış-abil-ir-ler?
Can COM/and who together work-ABIL-AOR-3PL
'Can and who can work together?'

b. **S kem my* poedem v Moskvu?
with whom we will-go to Moscow
'Who and I will go to Moscow?'

(Vassilieva M. B., 2005, p. 99)

Since V&L rule out such constructions a priori, they would have to make added assumptions to explain these data. However, there is nothing inherent in the present model against such sentences, giving my account an edge over V&L's. Further, if Turkish *ve* 'and' coordination can be shown to have similar structure to a CC, all else follows naturally from my proposal.

IPPCs with proper nouns:

Another property mentioned in Section 6.2 was that, in Turkish, IPPC-like interpretations can be achieved with constructions involving two proper nouns. In other words, it is not obligatory that at least one conjunct be pronominal. Consider (54).

(54) Q: Millet nerede?
people where
'Where is everybody?'

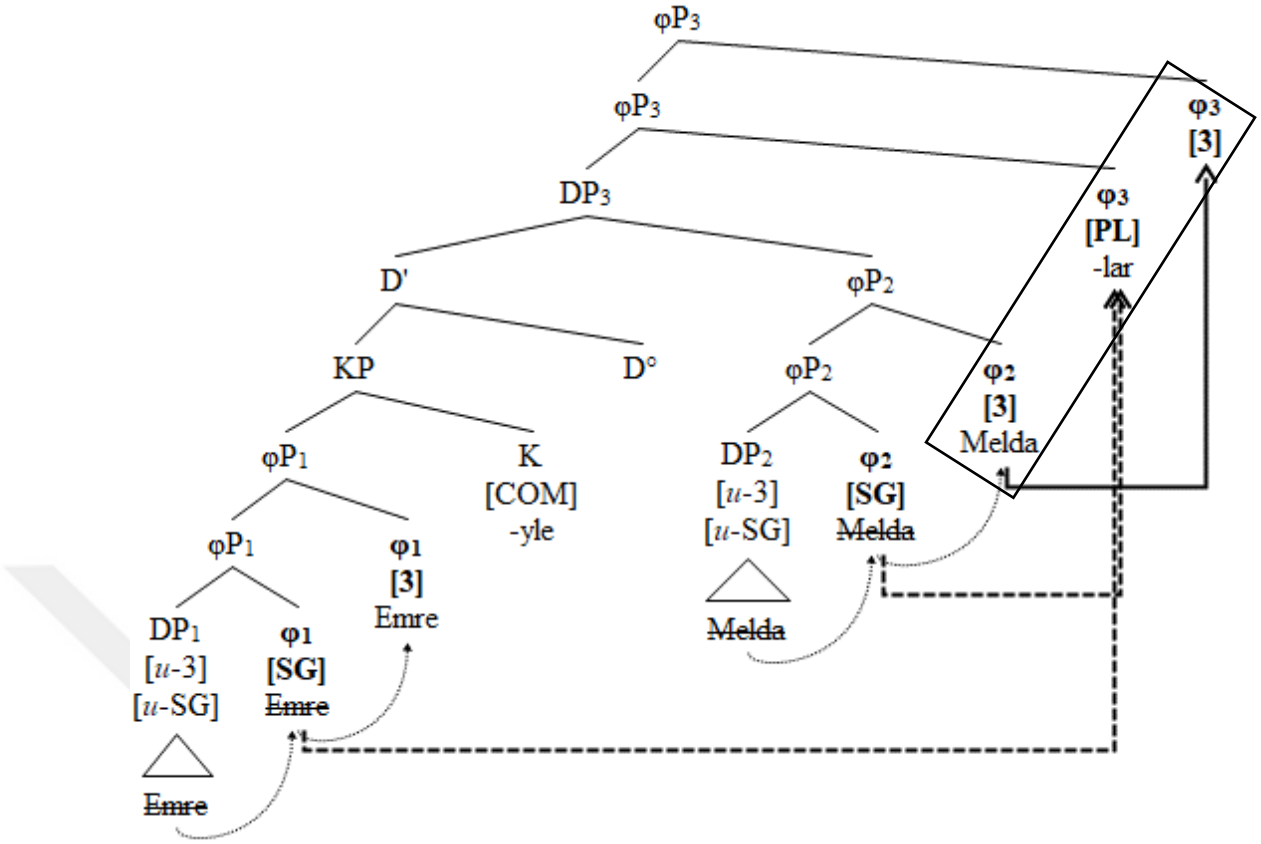
A: Can-'la biz ev-de-yiz.
Can-COM we home-LOC-1PL

Emre-'le *Melda-'lar* da birazdan gel-ecek-ler.
Emre-COM Melda-PL too soon come-FUT-3PL

'Can and I are at home. Emre and Melda will come soon.'

This constitutes an insurmountable challenge for Vassilieva and Larson (2005) as well as Dékány (2009), who base their analyses on the semantics of plural pronouns. My account, however, predicts such construction to be grammatical. Just as the Person feature of a pronominal conjuncts can raise to φ_3, so can that of a proper noun, as long as the language allows IPPCs with proper nouns. (55) gives the structure my account would assign to (54).

(55) Emre'yle Melda'lar 'Emre and Melda'



Russian, however, apparently rejects such constructions. Given AH, it must be that Russian only allows IPPCs with personal pronouns, while Turkish does so with nominals all the way down to Kin Terms. Another possibility I would like to entertain is that the lack of such constructions might be related to the fact that Russian also lacks productive associative plural markers on proper nouns (Daniel & Moravcsik, 2013). Thus, while proper nouns in Turkish can be attached the plural marker *-lAr*, forming associative plurals as in (56), this is simply not possible in Russian.

(56) *Melda-'lar* gel-di mi?
Melda-PL come-PST QUES
'Did Melda and her associates (family/friends etc.) come?'

If this line of reasoning is on the right track, we may safely conclude that the lack in Russian of constructions like (55) might be because Russian has no way of spelling them out, as the plural suffix cannot be attached to proper nouns.

Directionality:

We have already seen in Section 6.2 that the order of pronouns in IPPCs must obey AH. There must, however, be an explanation as to why the hierarchically more prominent pronoun precedes the hierarchically lower one in Russian but follows it in Turkish.

(57) a. *My s nei* / **Oni so mnoi* pojom. (Russian)
we with her / They with me sing.1PL
'She and I / *I and she sing.'

(Feldman, 2002, p. 24)

b. *Sen-le biz* / **Biz-le sen* anlaş-abil-ir-iz. (Turkish)
you(SG)-COM we / we-COM you(SG) collaborate-ABIL-AOR-1PL
'You(SG) and I / *I and you(SG) can work together.'

In V&L's account, this follows because the comitative DP is a complement of the plural pronoun; and complements follow their heads in Russian, but precede them in Turkish. Under my proposal, the comitative pronoun is not a complement of the plural one, as I do not assume CCs to be complementation structures (see (37a)). So, why is it?

I propose that this follows from the interaction of two independently motivated factors. First, recall that, per AH, 1st person features have priority over 2nd person ones, which in turn have priority over 3rd person ones. The priority works in such a way that, given a complex DP containing two conjuncts with opposing person features, the person feature of the complex DP is determined by that of the hierarchically higher conjunct. Thus in (58), the agreement on T shows that,

irrespective of its position, it is the first-person feature *ben* 'I' that determines the person feature of, i.e. is copied to, the complex DP.

(58) a. *Sen-le ben* birlikte çalış-abil-ir-iz / *çalış-abil-ir-siniz.
you-COM I together work-ABIL-AOR-1PL / work-ABIL-AOR-2PL
'You(SG) and I can work$_{1PL/*2PL}$ together.'

b. *Ben-le sen* birlikte çalış-abil-ir-iz / *çalış-abil-ir-siniz.
I-COM you together work-ABIL-AOR-1PL / work-ABIL-AOR-2PL
'I and you(SG) can work.1PL / *work.2PL together.'

Second, in the context of a coordinate construction, φ-agreement normally takes both conjuncts into account. This is violated in a number of cases, resulting in what is called the Close Conjunct Agreement (CCA)[86] (Progovac, 1998; Benmamoun, Bhatia, & Polinsky, 2009; Zhang N. N., 2010). In CCA, Agreement only takes into consideration the closer (i.e. structurally higher) conjunct.

(59) a. There is/??are [a man and three children] at the front door.

b. There *is/are [three children and a man] at the front door.

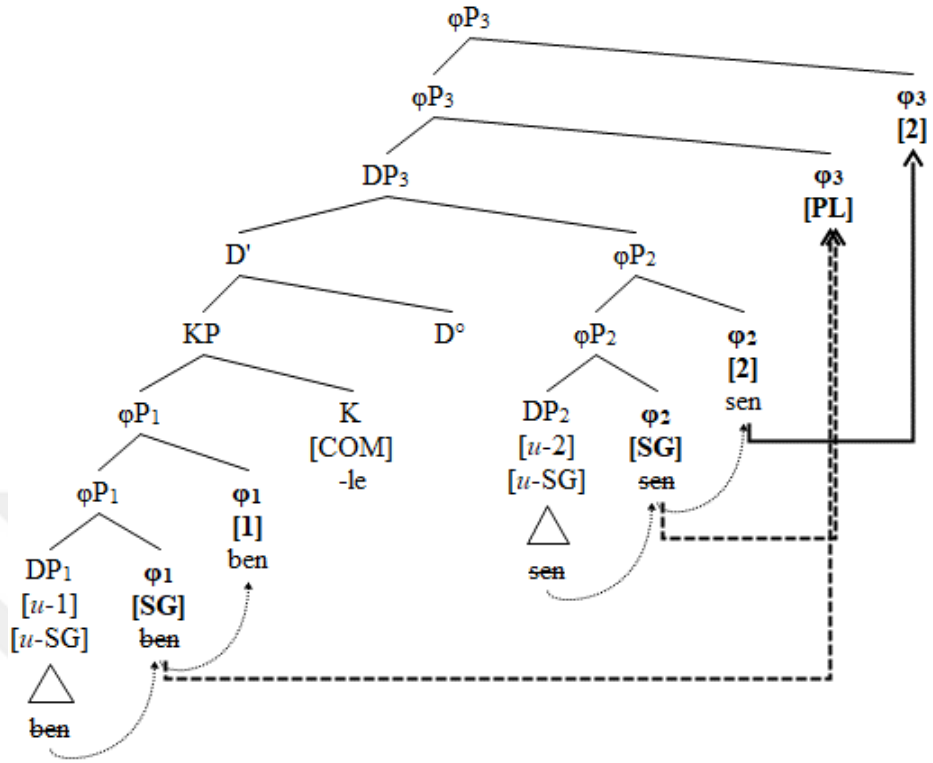
In a sense, Agreement behaves "lazy" in not bothering to monitor all conjuncts.

Now, CCA dictates that, if it is possible at all, the φ-features of the higher conjunct participate in Agreement; and the AH dictates that the conjunct that determines the Person feature of the complex DP be the more prominent one. In my system, this means that the conjunct that undergoes agreement with φ_3 via (overt or covert) raising must be the one occupying φ_2, not the one in φ_1. Thus, (60a-b) are ruled out.

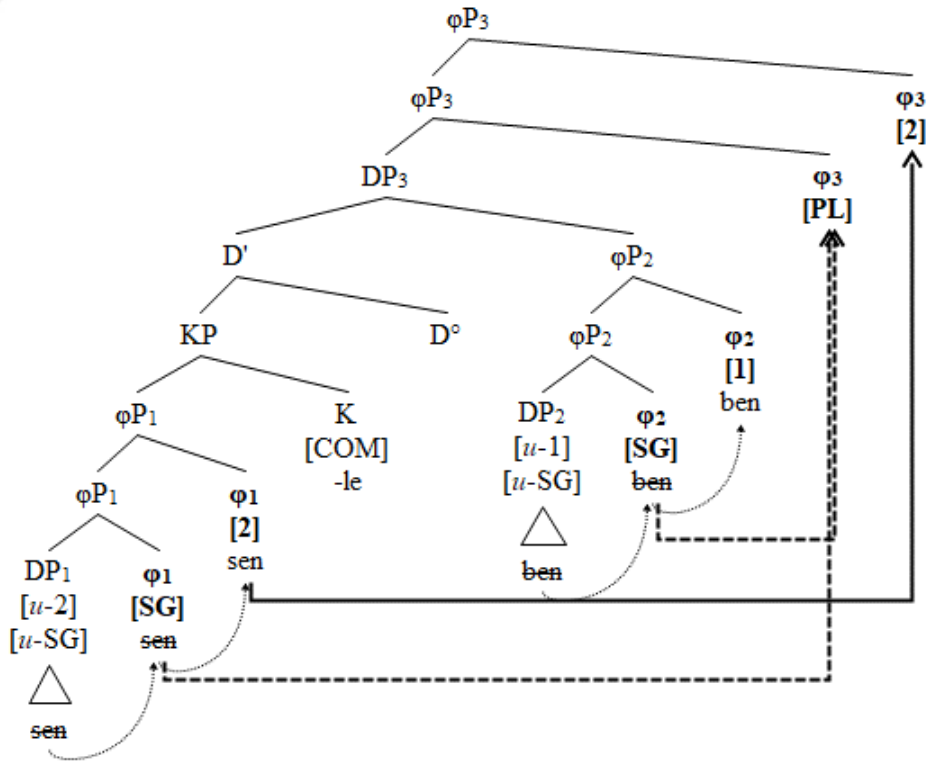
[86] A situation similar to CCA is observed with case assignment: the case assigner assigns the expected case only to the closer conjunct. This is referred to as Unbalanced Case. See Johannessen (1998) for details.

(60) Animacy Hierarchy and Close Conjunct Agreement

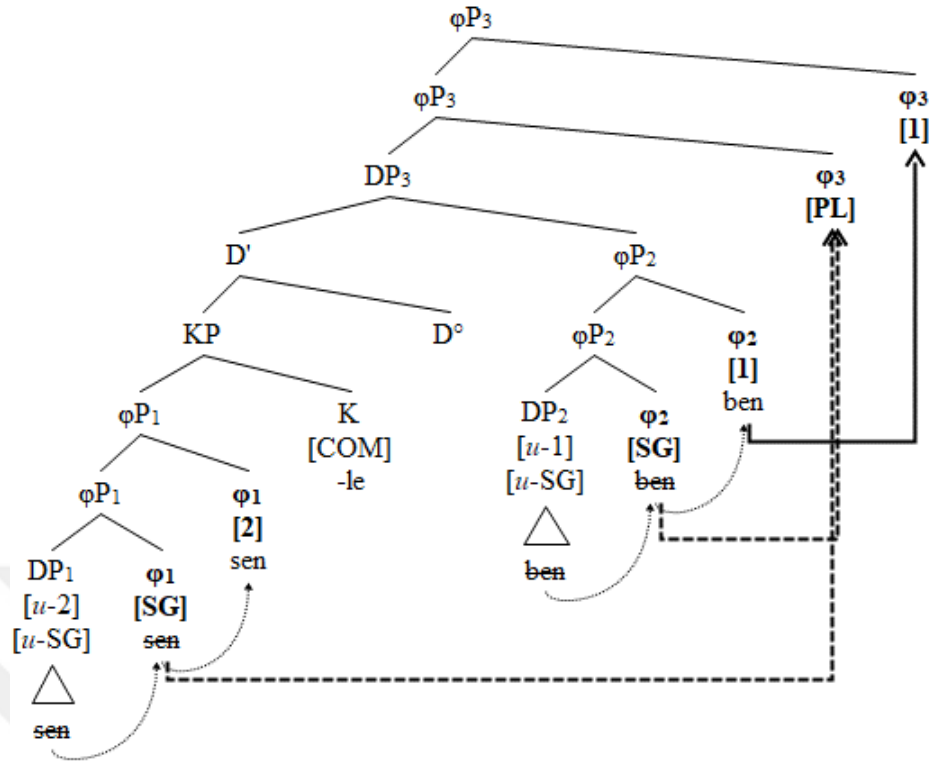
a. Ruled out by AH



b. Ruled out by CCA



c. Grammatically licit



(60a) obeys CCA but violates AH because despite the first person *ben* 'I', the features of the second person *sen* 'you(SG)' are copied to φ_3. (60b) obeys AH but violates CCA, as the person features are copied from the structurally lower conjunct. This leaves us only with (60c) which respects both CCA and AH. The position of φ_3, which attracts the Person feature of the pronominal conjunct, w.r.t. DP_3 is governed by the directionality parameter in both languages. Thus, the fact that the plural pronoun, spelled out in φ_3, precedes the comitative conjunct is Russian but follows it in Turkish does not necessarily mean, contra V&L, that the pronoun heads the coordination. The same effect can be achieved by the interaction between AH and CCA.

Semantics of PL pronouns:

My agreement analysis has the added advantage over the "saturation" accounts in that it handles IPPCs without making undesired assumptions about the semantics and syntactic structure of plural pronouns. It is a welcome result that a structural phenomenon is accounted for through structural means.

Crosslinguistic variation:

Recall that, by blaming the IPPC problem on the semantics of plural pronouns, V&L are forced to also assume that plural pronouns in the languages that lack IPPCs must also be different semantically.[87] In my account, however, we simply do not need to make such disastrous assumptions. The lack of IPPCs in English, for instance, can be accounted for by assuming that English simply requires the agreement to be covert. Languages do indeed contrast in requiring, allowing, or disallowing non-semantically motivated overt agreement operations.

6.4.3.2 Further evidence

In this section, I briefly discuss several pieces of data that also receive a natural explanation under the agreement analysis proposed.

Doubly-marked PL pronouns:

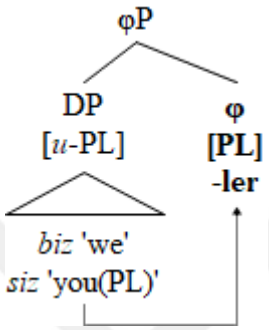
In Turkish, inherently plural pronouns can be attached the regular plural suffix *-lAr* (Kornfilt, 1997; Göksel & Kerslake, 2005). According to Göksel and Kerslake (2005, p. 231), doubly-marked plural pronouns express a marginally different effect, and are

[87] I am not ruling out the possibility here that pronouns of different languages might be spelling out smaller or larger structures, as argued for in Déchaine and Wiltschko (2002) Rather, the semantics of pronouns should be kept homogeneous crosslinguistically. By the universality of semantics, if plural pronouns are unsaturated objects in one language, we would predict them to be so in all languages.

confined to certain circumstances. Nevskaya (2005) reports that such pronouns are common in Turkic languages. Thus, *biz-ler* 'we-PL' and *siz-ler* 'you(PL)-PL' are grammatical forms in Turkish.

I tentatively propose that double marking results when the plural feature in the lower copy escapes deletion in PF, as in (61).

(61) Doubly-marked PL pronouns[88]



[88] Von Gabain (1974, p. 64) notes that *–(i)z* is a marker of duality, but is no longer productive. It might be that due to phonological blurring of morpheme boundaries, the forms including *–(i)z* were later reanalyzed as mono-morphemic, and started to be parsed as D forms rather than D+φ. If so, it comes as natural that the PL suffix reemerges on PL pronouns like *biz* as a Spell-out of the PL φ as in (61).

Although the dual nature of *biz/siz* has been mostly lost in Turkic languages (Nevskaya, 2005), duality is still present in verbal agreement patterns.

(i) a. Al-alı. (Turkmen)
take-OPT.1DUAL
'Let's take (you.SG and me).'

b. Al-alıŋ.
take-OPT.1PL
'Let's take (you.PL and me).'

(ii) a. Al-aalı. (Tuba, North Altay variety)
take-OPT.1DUAL
'Let's take (you.SG and me).'

b. Al-aq
take-OPT.1PL
'Let's take (you.PL and me).'

(Nevskaya, 2005)

If agreement on T is checked by a matching feature on φP in [Spec, TP], then there must be dual vs plural pronouns in the subject position of (a) and (b) sentences respectively.

Accordingly, my analysis predicts that, since the plural pronoun in IPPCs starts out as singular and picks out the plural feature of the coordinated DP after raising, doubly-marked plural pronouns like *bizler* 'we-PL' should never participate in IPPCs. This prediction is borne out.

(62) *Can'la* *biz-ler* öğrenci-yiz.
Can-COM we-PL student-1PL

i. '*Can and we* are students.'
ii. *'*Can and I* are students.'

This is because a plural pronoun in an IPPC has one plural feature (that of φ_3) that can be spelled out, while the plural pronoun in an EPPC has two plural features (those of φ_2 and φ_3). As in the case of regular doubly-marked plural pronouns, the plural pronoun in an EPPC must have found a way of avoiding PF deletion in (62.i), hence the contrast.

Extraposition:

Note below that only certain extrapositions are possible in the context of a CC.

(63) Can'la *ben/biz* sinema-ya git-ti-k.
Can-COM I/we cinema-DAT go-PST-1PL
'Can and I went to the cinema.'

a. Can'la sinemaya gittik *biz*.
a'.*Can'la sinemaya gittik *ben*.

b. *Biz* sinemaya gittik Can'la.
b'. **Ben* sinemaya gittik Can'la.

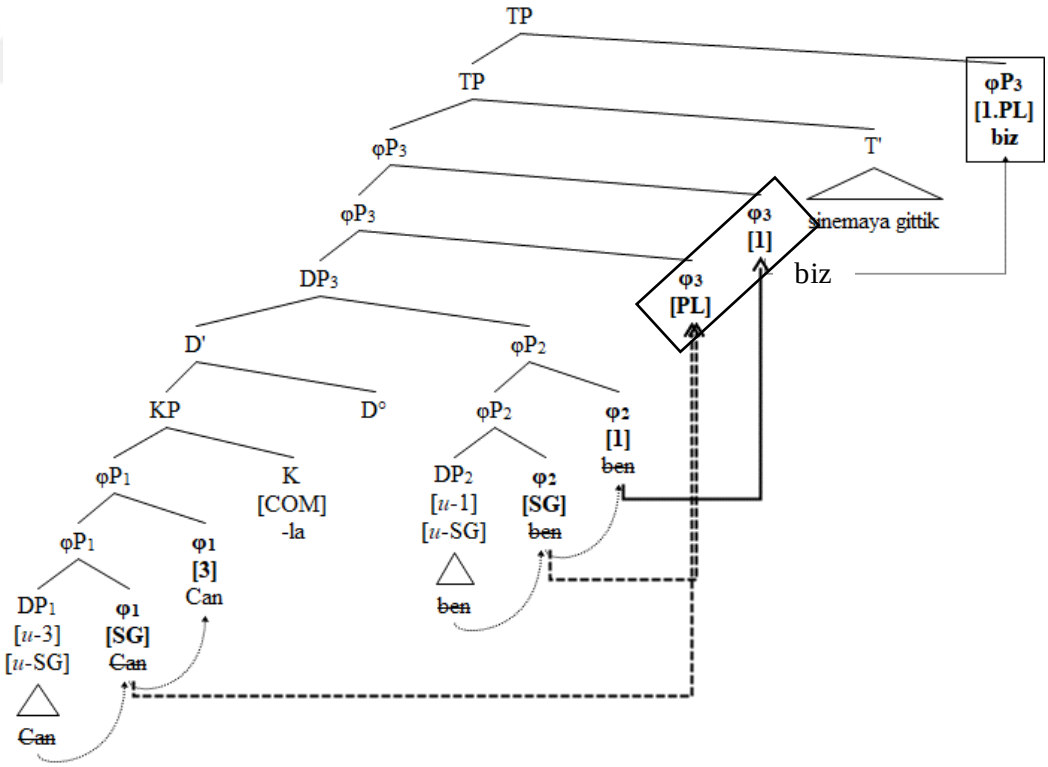
c. Can'la sinemaya gittik.

d. Sinemaya gittik Can'la.

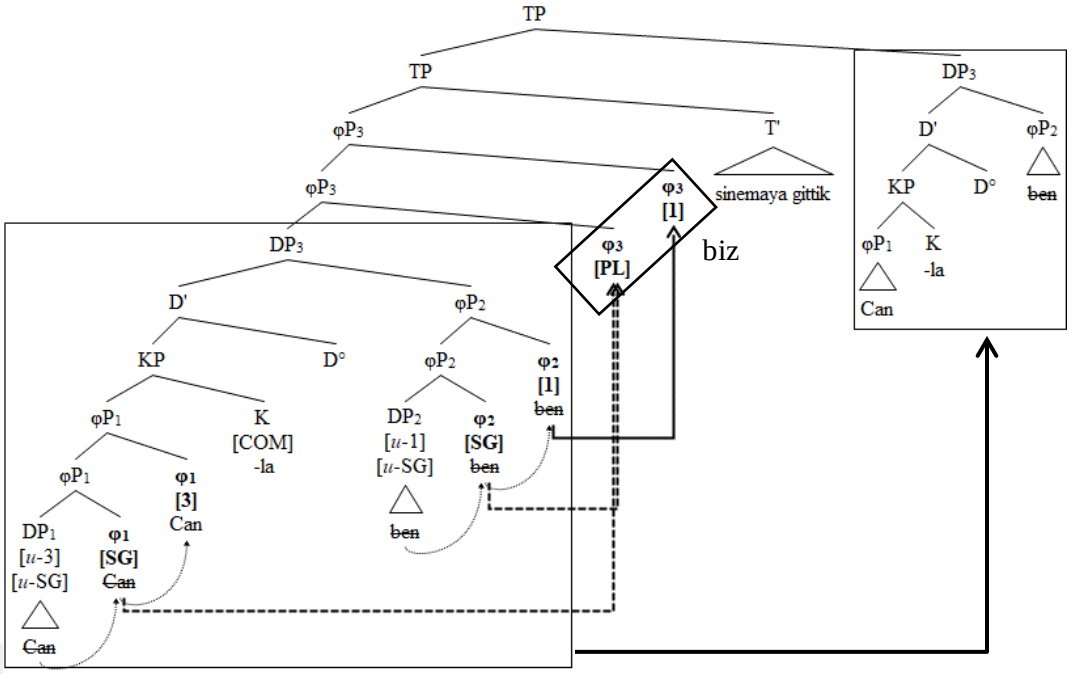
I am assuming that only elements occupying φ° can undergo pro-drop. This is in line with the observation that pro-drop is only possible in the presence of overt agreement on T. The contrast between (63a) and (63a') on the one hand, and (63b) and (63b') on the other show that backgrounding of either conjunct is only possible when the φ-agreement is overt (i.e. when the pronoun surfaces as plural in φ_3), while (63c-d) show that the plural pronoun can be dropped totally. Why is this distributional contrast? I propose that this follows from two factors: Coordinate Structure Constraint (CSC) (Ross, 1967) and pro drop. CSC requires that no conjunct should undergo a syntactic operation on its own; and pro drop allows total deletion of pronominal subjects.

Under my analysis, the CCs in (63a) and (63b) would be as follows.

(64) a. [$_{DP}$ [$_{DP}$ Can'la ~~ben~~] t_i] sinemaya gittik [biz]$_i$.



b. [DP [DP t_i] Biz] sinemaya gittik [Can'la ~~ben~~]$_i$.



In (64a), what is extraposed is the φ3 of the complex DP, now spelled out as *biz* 'we', leaving both conjuncts behind. Since no conjunct is moved alone, CSC is respected, correctly predicting the construction to be grammatical. In (64b), both conjuncts are moved together, again respecting CSC. However, since the pronominal conjunct has moved out of the coordinate construction to φ3 and spelled out there, it receives no phonological exponence in its landing position. On the other hand, the appearance of the singular *ben* 'I' in (63a') and (63b') indicate that raising to φ3 is covert in this case. Thus, it must be that only one conjunct is moved, in violation of CSC. As for (68c-d), they are examples of pro drop. In either case, the singular pronoun *ben* 'I' has overtly raised to φ3 and subsequently dropped either before or after extraposition.

This analysis of pro drop follows Déchaine and Wiltschko's (2002) proposal that nominal pro-forms come in three categories: pro-φPs, pro-DPs, and pro-NPs. If pro drop can only target pronominal material in φPs, but crucially not those in (discourse-prominent) DPs, as I have assumed, we independently need a φP above the complex DP. Otherwise, the dropping of the plural pronoun in (63c-d) would

violate CSC, because one of the conjuncts would have undergone deletion, leaving the other intact.

Crucially, such an explanation is only possible if raising of the higher conjunct to φ_3 of the complex DP is real. An account not assuming such a movement would have to make a number of added stipulations to account for a set of data that my proposal accounts for naturally.

Capeverdean CCs:

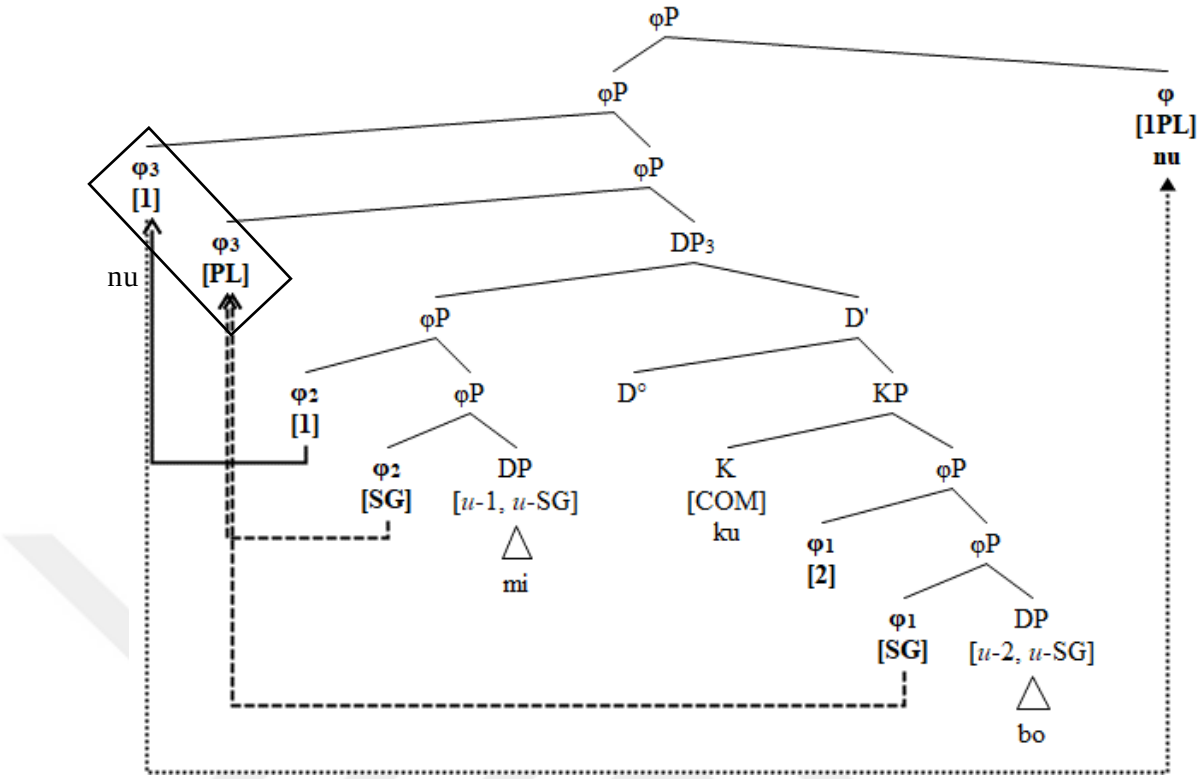
Another set of data that the agreement analysis captures naturally comes from Capeverdean, a Portuguese-based creole spoken on the island of Cape Verde off the coast of West Africa. Brito, Matos and Pratas (2015) report that Capeverdean allows CC constructions. In this language, IPPCs with personal pronouns have an interesting property. Consider the following sentence.

(65) *Mi ku bo nu* ta studa djuntu.
me with you we HAB study together
'You and I study together.' lit. 'Me and you we study together.'
(Brito, Matos, & Pratas, 2015, p. 21)

Note that the CC *mi ku bo* 'me and you' is followed by the plural pronoun *nu* 'we'. The question, then, is how to account for that. Why and how is there a plural pronoun in the construction alongside two conjuncts?

Considering that Capeverdean is a head-initial language, and following the standard form of overt agreement, my analysis predicts the following structure.

(66) Capeverdean CC



I propose that raising for feature-movement does indeed take place in Capeverdean, as shown in (66), giving rise to the accumulated feature [Person:1, Number:PL], the feature specification for *nu* 'we', which then extraposes to the right of the complex DP. The singular pronoun *mi* 'I' in φ_2 somehow escapes deletion in PF, either through the rightward extraposition of *nu* 'we' in φ_3 or by some other mechanism. The result is that both φ_2 and φ_3 are spelled out, presenting, I believe conclusive, evidence that raising to φ_3 exists. Since earlier analyses pinpoint the IPPC problem to the syntax and semantics of plural pronouns, one wonders how they would have accounted for such data.

Thus, I conclude that, coupled with independently established constraints, the agreement analysis proposed in this study naturally accounts for a number of intriguing properties of IPPCs without further stipulations. The most significant aspect of the proposal is that it treats pronouns uniformly in all constructions and in

all languages. This is in line with the long-held intuition that semantics is universal but constraints might be language specific. Not to mention that my analysis survives several tests that saturation accounts have severe problems with.

6.5 The case of correlative coordinators

It was demonstrated is Section 6.2 that, unlike Russian, Turkish allows IPPCs with the regular coordinator *ve* 'and'. However, not every coordinator is compatible with IPPCs.

(67) IPPCs with other coordinators

a. *Hem* Can *hem* (*de*) biz sınav-a geç kal-dı-k.
Both Can and too we exam-DAT late arrive-PST-1PL
'Both Can and we/*I arrived late for the exam.'

b. *Ne* Can *ne* (*de*) biz bun-u duy(-ma)-dı-k.
Neither Can nor too we this-ACC hear-NEG-PST-1PL
'Neither Can nor we/*I heard that.'

c. *Ya* Can *ya* (*da*) siz oda-m-a gel-in.
Either Can or too you(PL) room-1SG.POSS-DAT come-2PL.IMP
'Either Can or you(PL/*SG) should come to my room.'

The ungrammatical readings of (67b-c) can presumably be accounted for if we assume that in dissociative coordination, the number feature of the complex DP is not compositional. This means that φ_3 does not "add up" the number features of the conjuncts. But this leaves us with another puzzle: How can the complex DP receive plural agreement? My analysis predicts that either (i) the complex DP agrees with the higher conjunct, in which case IPPC reading should be possible, or (ii) the complex DP surfaces with the default number feature, i.e. singular. But the data confirms no option. Thus, (67b-c) are left unaccounted for.

The sentence in (67a) poses another challenge. This time, the coordination is not disjunctive, meaning that the complex DP must be plural in number by adding up the number features of its conjuncts. Therefore, an IPPC reading should be possible, contrary to the fact.

Based on sentences like (68a), it was proposed that coordination actually involves the elliptical structure in (68b) (Schwarz, 1999).

(68) a. John read a book yesterday, and a newspaper.

b. John read a book yesterday, and ~~he also read~~ a newspaper ~~yesterday~~.

Such constructions actually involve coordination of two sentences, with part of the second one being deleted under identity.

Heim and Kratzer (1998) argue that in these constructions, the phrase that survives deletion is always topicalized by adjoining to TP before deletion takes place. Pointing to sentences like (69), however, Johnson (1996) challenged the deletion analysis.

(69) a. They introduced Carrie and Will to each other.

b. *They introduced Carrie to each other and Will.

c. *They introduced Carrie to each other and they introduced Will to each other.

Note that (69b) is ungrammatical with the second conjunct extraposed, unlike (68b). According to the ellipsis analysis, this is because (69b) is derived from the already ungrammatical (69c). Thus, ellipsis analysis is only possible when the coordinate construction does not function as the antecedent of *each other*.

In Turkish, the coordinators *ve* 'and' and *ile* 'with' contrast with *hem… hem (de)* 'both… and' in that while *ve/ile* can coordinate antecedents of *birbiri* 'each other', *hem… hem (de)* cannot.

(70) a. Can *Melda ve/ile Ömer'i* birbiriyle tanıştırdı.
Can Melda and/with Ömer each.other introduced
'Can introduced Melda and Ömer to each other.'

a'. *Can Melda'yı birbiriyle tanıştırdı ve/ile Can Ömer'i birbiriyle tanıştırdı.
'Can introduced Melda to each other and Can introduced Ömer to each other.'

b. *Can *hem Melda hem de Ömer'i* birbiriyle tanıştırdı.
Can both Melda and too Ömer each.other introduced
'Can introduced both Melda and Ömer to each other.'

b'. *Can Melda'yı birbiriyle tanıştırdı ve Can Ömer'i birbiriyle tanıştırdı.
'Can introduced Melda to each other and Can introduced Ömer to each other.'

The contrast between (70a) and (70a') shows that *ve/ile* coordination may not be the result of ellipsis, as the ungrammatical (70a') cannot properly function as the basis of elision for the grammatical (70a). For (70b), however, one can argue that the ungrammaticality is due to ellipsis since the already ungrammatical (70b'), the supposed base for ellipsis, cannot function as the base for ellipsis. This suggests that *hem… hem (de)* coordination may always requires ellipsis. If so, the IPPCs in (67a) involving *hem… hem (de)* might be ruled out because such constructions are examples of not DP coordination, but TP coordination, with the second TP undergoing ellipsis. Whether this analysis is on the right track needs further research, specifically with data from other IPPC languages.

6.6 Summary

This chapter addressed the syntactic structure and semantic interpretation of PPCs. With Sauerland's (2003) theory of number marking, it was assumed that a φP dominates the DP. IPPCs were shown to arise when the Person feature of the higher singular pronominal conjunct raises to the relevant φ° of the coordinated DP. At the landing site, the accumulated φ-features create the perfect feature specification for plural pronouns. This movement results in a partial chain, which undergoes reduction at PF. Subsequently, the singular pronoun in φ_2 is deleted and the plural one in φ_3 receives an appropriate Spell-out at PF. In the EPPC reading, however, the pronoun is merged with the plural feature and spelled out as such. The fact that the number feature of every DP is read off from its merge position explains the ambiguity involved in these constructions: Either the pronoun is singular but surfaces as plural due to the plural feature of the coordinated DP, yielding an IPPC reading; or the pronoun merges as plural and interpreted accordingly, yielding the EPPC reading. Since the proposed mechanism accounts for PPCs through structural relations without making unwarranted, language-specific assumptions about the semantics of plural pronouns, it can be considered superior to earlier analyses that reduce the problem to the semantics of plural pronouns. Significantly, though, such a mechanism is only possible under Sauerland's (2003) φP account of Number that this study assumes throughout.

CHAPTER 7

CONCLUSION

7.1 Major findings and claims of the study

This dissertation investigated numeral classifier constructions of Turkish. Since a numeral classifier construction minimally contains an NP, a classifier, and a numeral, the morphosyntax and semantics of these components had to be considered in tandem. The following research questions were raised in particular.

(i) *The NP*: What do bare nouns (in their number-neutral, singular, and plural form) denote in Turkish?

(ii) *The classifier*: What is the function of a classifier? How, if at all, does it affect the interpretation?

(iii) *The construction*: What is the internal constituency of classifier constructions?

(iv) *Measure words*: Why do classifiers reject co-occurrence with measure terms?

(v) *Number*: How is Number expressed in Turkish nominals syntactically and semantically? In particular, why do numerals greater than *one* reject co-occurrence with plural nouns?

In pursuing an answer to these questions, a number of related issues were also addressed during the discussion.

Chapter 3 addressed questions (i) and (ii), i.e. the semantics of Turkish bare nouns, and the function of classifiers, leading to the following conclusions:

Claim 1: The domain of Turkish bare nouns is ambiguous, including object as well as kind individuals.

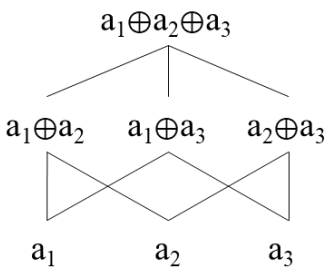
It was shown that [Numeral-NP] constructions lacking a classifier or kind word, as well as [Demonstrative-NP] constructions which resist classifiers, are globally ambiguous as to whether they refer to object or kind entities à la Carlson (1977), unless contextual factors strongly favor one reading. It was also shown, based on Nomoto (2013) data that such a distribution applies crosslinguistically. The domain of Turkish bare nouns was then shown to be structured as a complete atomic join semilattice in the sense of Link (1983). The difference between the object and kind domains lies in what the atoms represent in each: The object domain contains object individuals as atoms, and the kind domain contains kind individuals as atoms.

Claim 2: The kind domain includes subkinds as atoms.

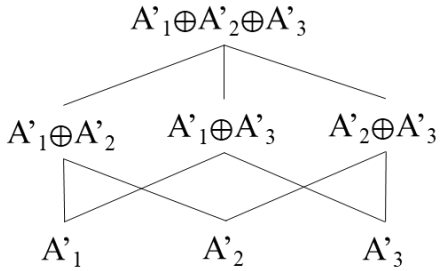
This conclusion was driven, in refinement of Claim 1, based on the observation that Turkish plurals denote pluralities of subkinds when they take the kind domain. The domain Turkish nominals take can thus be represented as in (1).

(1) Domain of Turkish bare nouns

a. Object individuals (e^o)



b. Kind individuals (e^k)



It was further demonstrated that Turkish does have count/mass contrast, and that the object/kind ambiguity applies to count as well as mass nouns.

Claim 3: Kind-denoting domain must be number-neutral.

The two sources for kind denotation proposed in the literature are:

(2) Sources of kind denotation

a. *True kind* (Link, 1983)
This is the singular atomic kind, formed from the properties of subkinds through ↑, and thus denotes in the kind domain. The signature feature of this kind is that it does not allow a see-through relation with its members.

b. *Kind emulation* (Chierchia, 1998a)
This is the plural non-atomic kind, formed from the properties of objects through ∩, and thus denotes in the object domain. The signature property of this kind is that it allows a see-through relation with its members.

With this, a question arose as to why Turkish plurals cannot be interpreted as *Kind emulation*. The conclusion was that a kind-denoting NP must be number-neutral, given that kinds can be instantiated by singularities as well as pluralities. Since, however, Turkish plurals contrast with their English counterparts in exclusively taking pluralities as their domains, they cannot function as kind-referrers. Thus, Turkish plurals can potentially refer to pluralities of subkinds, but never to the pure kind directly (with a caveat for animates, whose status is yet to be understood).

Claim 4: Classifiers restrict the domain to object individuals.

One function of Turkish numeral classifiers that emerged from the discussion was that they serve to restrict the two-way ambiguous domain of the bare noun to object individuals only (with kind words doing the opposite). This conclusion was further strengthened by Nomoto's (2013) observation that exactly the same distribution applies crosslinguistically to the representative languages of Japanese, Cantonese, Malay, Persian, and English.

Chapter 4 addressed questions (iii) and (iv), i.e. the syntactic constituency of classifier constructions, and the apparent complementarity between classifiers and measure words. The discussion concluded that:

Claim 5: Lexical classifiers are regular NPs of type <e,t>.

Lexical classifiers typically occur as the head of a compound in Turkish. In contrast to numeral classifiers, though, they do not require the presence of a numeral. The above claim was made based on a number of distributional and interpretive differences between lexical classifiers and functional (i.e. numeral) ones. Regarding the semantic role of lexical classifiers, it was then proposed, based on Grimm (2012a; 2012b) that:

Claim 6: Lexical classifiers spell out the perceivable atoms in the denotation of granular aggregates.

Claim 7: Numerals are number-denoting *n*-type elements.

This is in contrast to analyses taking numerals to be <<e,t>, <e,t>>-type modifiers (Link, 1987; Ionin & Matushansky, 2006), <e,t>-type predicates (Partee, 1987), and <<e,t>, <<e,t>, t>>-type determiners (van der Does, 1993). I demonstrated, however, that *n*-type view of numerals squares much better with measure constructions in which a numeral, in consonance with a measure word, measures the relevant entity, rather than modifying it attributively or denoting a property of it predicatively.

Claim 8: Functional classifiers and measure words are relational items of type <n, <e,t>>.

It was proposed, with Scontras (2014), that cardinality is essentially a measure function. It should thus come as natural that both classifiers and measure words target the head position of μP, spelling out its varying features. We thus arrived at yet another function of classifiers: alongside restricting the domain to object individuals, classifiers also spell out the CARD value of μ°. The [Numeral-Classifier] sequence thus denotes a cardinality measure, which is then applied to the <e,t>-type NP through standard modes of semantic composition.

Claim 9: No stacking of classifier constructions is allowed.

Multiple classifier constructions, in which [Numeral/Demonstrative-CL] sequences appear to be stacked on top of one another, were demonstrated to be examples of partitive or attributive constructions underlyingly, with perhaps covert movement to derive the surface word order. We further demonstrated that, even in MCLCs, classifiers retain their role of domain restriction.

Claim 10: Some kind word constructions 'instantiate a specimen' rather than 'restrict the domain'.

Some kind word constructions were shown to be a double-edged sword: Quite contradictorily, one part of the evidence points to the conclusion that they reference kind entities, while the other part strongly suggests that they reference object entities. The tension was solved by proposing that the mechanism at work in these constructions is not the usual 'domain restriction' but one of 'specimen

instantiation', which has a lot in common with partitive MCLCs. This helped us keep the proposed function of classifiers and kind words intact.

Addressing research question (v), Chapter 5 turned to how Number is expressed in Turkish nominal constructions. It also addressed the issue of classifier/Number complementarity. The following claims were made.

Claim 11: Sub-DP nominals lack Number specification, always surfacing as number-neutral.

These were demonstrated to project up to μP, which inherently lacks Number specification, and thus are restricted to contexts like existentials that require/handle number-neutral readings.

Claim 12: DPs must always express Number as singular or plural.

Number specification was thus demonstrated to be a property of DPs only, which lends support to Sauerland's (2003) φP account of Number marking, proposing that semantically interpreted Number features reside above the DP, with those on NPs arising as an uninterpretable reflex of morphosyntactic agreement.

Claim 13: Classifiers do not stand in complementary distribution with Number markers.

The present model leaves no room for the long-held notion, most explicitly stated in Borer (2005) and Chierchia (1998a; 1998b), that classifiers and Number markers are paradigmatically related, serving the same function of typically of dividing the denotation of an otherwise mass-denoting NP into countable units. Having

demonstrating that this cannot be the case, I then proposed, and adduced evidence for, the Number Neutrality Condition.

(3) Number Neutrality Condition
μP exclusively combines with number-neutral properties.

Chapter 6 investigated the issue of Plural Pronoun Constructions in which morphological plural markers on pronouns fail to receive the predicted semantic interpretation. Assuming Sauerland's (2003) account of Number marking, I demonstrated how the proposed model captures the distribution of Plural Pronoun Constructions that have thus far resisted an explanation. The major claims of this chapter were:

Claim 14: The plural feature on the plural pronoun in PPCs is not a feature of the pronoun itself but one of the coordinated DP.

It was argued that in a PPC like (4), the plural feature of the pronoun *biz* 'we' spells out the plurality on the comitative coordination *Can'la ben* 'Can and I', rather than the plurality on the pronoun, which does not exist in the first place.

(4) Can-'la biz
Can-COM we
'Can and I'

The singular pronoun *ben* 'I' was shown to surface as the plural form *biz* 'we' when the singular pronoun rises from the φ position of the pronominal conjunct to the φ position of the comitatively coordinated DP, an instance of close conjunct agreement (Progovac, 1998; Benmamoun, Bhatia, & Polinsky, 2009; Zhang, 2010). The lower copy of the chain thus created undergoes subsequent PF deletion, leaving us with the plural pronoun.

Claim 15: Correlative coordinators do not allow Plural Pronoun Constructions because they are elliptical.

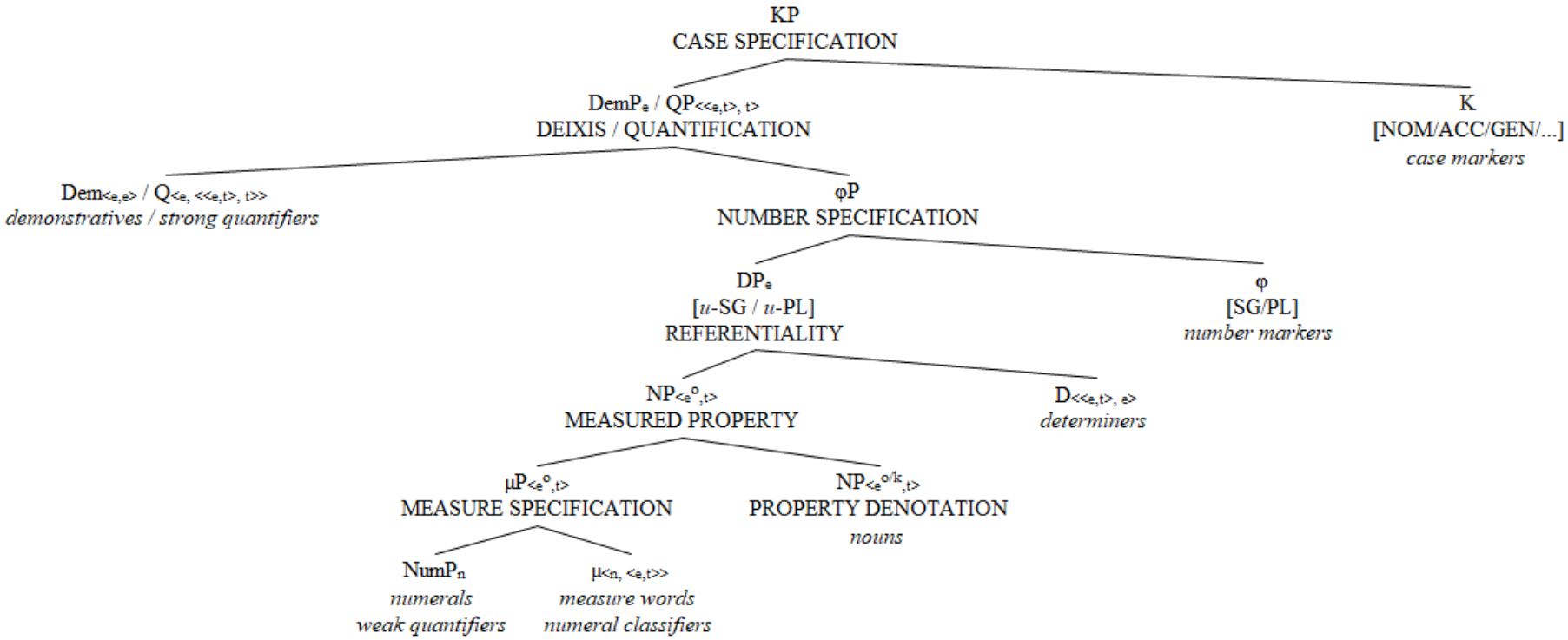
Regarding the question of why PPCs cannot be built on correlative coordinators like *hem… hem… (de)* 'both… and…', it was proposed that these constructions involve coordination of not DPs but TPs, with concomitant deletion of identical parts.

(5) Hem Can ~~sınav-a geç kaldı~~ hem de biz sınava geç kaldık.
both Can exam-DAT late arrived and too we exam-DAT late arrived
'Both Can ~~arrived late for the exam~~ and we/*I arrived late for the exam.'

Thus, PPCs cannot be built on constructions involving correlative coordinators, which are derived through ellipsis because the non-pronominal *Can* 'Can' and pronominal *biz* 'we' are not conjuncts of a coordinated DP underlyingly.

The overall structure of Turkish nominals emerging from this study is given in (7).

(7) Overall structure of Turkish nominals



In this representation, both demonstratives and strong quantifiers in Turkish take a Number-specified φP complement, capturing the facts that they combine with SG or PL nouns and never receive number-neutral readings. This reasoning nicely squares with the observation that both demonstratives and strong quantifiers have referential indices, making them inappropriate in number-neutral existential contexts.

7.2 Limitations and outlook

The discussion so far has established that Turkish plurals exclusively denote pluralities and are thus inappropriate for referencing number-neutral sets, except for the not-so-well-understood animates. It was also demonstrated in Section 3.3.3 that Turkish plurals denote the plurality of subkinds when they take the kind domain. In this section, I cite several contexts where plural NPs of Turkish can surprisingly be used to refer to number-neutral sets. Note however that some of these examples can still have the plurality-of-subkinds reading. More significantly, the plural NP in all cases can be replaced by the number-neutral bare form without dramatically altering the meaning.

Compound non-heads:

Though compounding is considered a lexical process, the non-head in Turkish compounds can, under certain circumstances, appear in the plural form, in violation of the No Phrase Constraint (Aronoff, 1976; Botha, 1984) and the Lexical Integrity Hypothesis (Chomsky, 1970; Di Sciullo & Williams, 1987; Bresnan & Mchombo, 1995).

(8) Inclusive plurals as compound non-heads

a. mutlu *insan-lar* şehr-i
happy human-PL city-COMP
'city of happy people'

b. *hayvan-lar* alem-i
animal-PL world-COMP
'animal world'

c. *borç-lar* kanun-u
debt-PL law-COMP
'code of obligations'

Occupying the non-head of a compound, these plurals necessarily receive a number-neutral reading. Observe, though, that a bare (i.e. number-neutral) form would be just as grammatical. (8c) rules out a possible argument that the non-head plural somehow induces a 'kinds-of' reading, given the plausible assumption that obligations have no perceivable subkinds. It is thus a mystery how the plural form is used inclusively despite its persistently plural interpretation elsewhere.

Category names:

Another context in which a plural is used inclusively is category names, typically found in stores.

(9) Inclusive plurals as category names

a. *ayakkabı-lar*
shoe-PL
'shoes'

b. ateşli *silah-lar*
fire arm-PL
'fire arms'

c. aşındırıcı *kimyasal-lar*
abrasive chemical-PL
'abrasive chemicals'

Again, a bare form would serve just as fine as a category name in these contexts. Despite the plausibility of a 'kinds-of' reading, the plural can still be used even when no subkind reference is intended. The relevant question, then, is why does the structurally simpler bare form not block the structurally more complex plural?

Legal documents:

Another context that allows plural nouns to have number-neutral interpretations is legal documents.

(10) Inclusive plurals in legal documents

a. kayıt *işlem-ler-i*
registration affair-PL-COMP
'registration affairs'

b. Başarısız *öğrenci-ler* program-dan at-ıl-ır.
unsuccessful student-PL program-ABL remove-PASS-PSR
'Failed students are removed from the program.'

c. Sınav *sonuç-lar-ın-a* itiraz sür-si yedi gün-dür.
Exam result-PL-COMP-DAT objection period-COMP seven day-COP
'The period objection to exam results is seven days.'

As with compounds and category names, the inclusively used plural in legal documents can easily be replaced with the truly number-neutral bare form without changing the intended meaning. Given that no subkinds of registration affairs, failed students, or exam results is intended, the puzzle of number-neutral plural remains unresolved.

Coursebook titles:

One final context that facilitates the use of a number-neutral plurals is coursebook titles.

(11) Inclusive plurals as coursebook titles

a. asit-ler, baz-lar, tuz-lar
acid-PL base-PL salt-PL
'acids, bases, salts'

b. gezegen-ler
planet-PL
'planets'

c. mantar-lar
mushroom-PL
'fungi'

Although the possibility of a 'kinds-of' reference is faintly available, it is not necessary, making an argument from plurality-of-subkinds impossible. This set of data thus continues to pose a challenge for the exclusively-plural analysis of Turkish plural NPs.

To conclude, this dissertation established that PL-marked nominals in Turkish pattern differently from their English counterparts in exclusively taking pluralities as their domains. In violation of the major claims of this study, however, there are cases in which a plural NP is used under a number-neutral reading, apart from plurality of types, plurality of abundance, and pluractionality discussed in Section 5.5.3. I suspect that most of these constructions come through translation from European languages like English, in which morphologically plural forms must be used when number-neutrality is strictly intended. More research is required to understand whether this is the case, or some other pragmatic factors are involved.

Further, the analysis developed in this work concluded that the classifier typology remains at the descriptive level, as it was demonstrated in Section 2.2 that even classifier languages have count/mass contrast, and in Sections 3.2 and 3.3 that the presence/absence of classifiers leads to parallel interpretive effects in obligatory, optional, and non-classifier languages. It was shown in particular that, irrespective of

the classifier typology, in the absence of classifiers or kind words, numeral and demonstrative constructions lead to ambiguity as to whether reference is made to object- or kind-level entities. To the extent that this conclusion is valid, no major typological difference is predicted between these three groups of languages, except perhaps the observation that obligatory classifier languages like Chinese require the kind/object disambiguation to be morpho-syntactically overt in numeral constructions, optional classifier languages like Turkish allow but do not require it, while non-classifier languages like English in general lack lexical resources to achieve this sort of disambiguation morpho-syntactically. It can thus be argued, as in Kratzer (2008), that numeral constructions are underspecified with respect to kind/object contrast in non-classifier languages, while this specification is morpho-syntactically supplied in (obligatory or optional) classifier languages, a pattern also attested in other linguistic processes. It is a matter of further research whether there are consistent interpretive differences between numeral constructions of classifier and non-classifier languages other than kind/object under-specification.

Another related point is whether numeral classifiers interact with other forms of classification. Aikhenvald (2003) reports a wide range of contexts where classificatory mechanisms are employed: noun class and gender systems, noun classifiers, numeral classifiers, locative and deictic classifiers, classifiers in possessive constructions, and classifiers used in the verbal domain. Aikhenvald (2003) also discusses constructions involving multiple occurrences of (sometimes identical) classifiers, as well as their agreement patterns. Given my proposal that numeral classifiers act as domain restrictors, a question arises as to whether other forms of classification have parallel functions, and if so, how they interact with numeral classification systems. My analysis predicts in particular that when two

domain-restricting classificatory mechanisms (say a lower noun classifier and a higher numeral classifier) interact, their co-occurrence possibilities will match that of the partitive classifier constructions discussed in Section 4.5.1. Constructions involving classifiers in the nominal as well as verbal domain, however, will be more complicated. These are questions that reach far beyond the confines of this work, but will contribute greatly to a deeper understanding of the issues involved.

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