The is a slightly modified version of the thesis submitted to the School of Graduate Studies.

THE SEMANTICS OF NUMBER MARKING: REFERENCE TO KINDS, COUNTING, AND OPTIONAL CLASSIFIERS

By

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ABSTRACT OF THE DISSERTATION

The Semantics of Number Marking: Reference to Kinds, Counting, and Optional Classifiers

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This dissertation examines the semantics of number marking in Turkish and the phenomena revolving around it, primarily in comparison to English. I argue that the Turkish number marking system patterns with the English number marking system, as well as offering novel insights into the variations between the two. Specifically, I claim that morphologically unmarked nouns (Turkish *kitap*; English *book*) are semantically marked as singular, whereas morphologically marked plural nouns (Turkish *kitap+lar*; English *book+s*) exhibit semantic unmarkedness, having a number neutral denotation (following Krifka 2003, Sauerland et al. 2005, Spector 2007, and Zweig 2009 for English, cf. Bliss 2004, Bale et al. 2010, and Görgülü 2012 for Turkish).

The investigation includes the semantics of kind reference, in the sense of Chierchia (1998b) and Dayal (2004b), the effects of which are revealed more significantly in Turkish than in English, extending to phenomena that pertain to naming kinds (cf. Carlson 1977 and Krifka et al. 1995). The analysis also expands to the semantics pseudo-incorporation,

which I argue involves singular kind reference in Turkish. This account applies to so-called weak definites of English differing minimally from a very similar account of Hindi pseudo-incorporation (Dayal 2011, 2015 and Aguilar-Guevara and Zwarts 2010).

This dissertation also addresses what these findings imply with regards to the semantics of counting. Turkish counting expressions differ from English counting expressions in the form of the nominal complement of numerals (Turkish *iki kitap*; English *two book+s*) and having an optionally realized numeral classifier (*iki (tane) kitap*). I start by showing that these variations do not signal variation in the nominal semantics of the two languages. Then, I examine the optional numeral classifier *tane*, the analysis of which illuminates the semantics of counting in general. With the aim to bring new insights to this little-understood element of counting expressions, the findings are compared to two more optional classifier languages, Western Armenian and Persian. The exploration of these languages provides striking confirmation of my claims regarding not only the semantics of counting but also the semantics of number marking and kind reference.

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Six years ago, I came to the United States to pursue a career in linguistics. And now I have a dissertation, and thinking the process behind it, I realize how hard it will be to express my gratitude. I would like to start by stating that this work has the support of all the linguistic community at Rutgers. I have been very lucky to have had the chance to be a part of it.

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DEDICATION

To dad, mom, İrem, Hooman, and my kitties Pepe and Mimi

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INTRODUCTION

This dissertation investigates the semantics of number marking, mainly in Turkish in a comparison with English, but also extends to two more languages that are in areal contact with Turkish, i.e., Western Armenian and Persian. The project involves the nature of kind reference, as well as the implications of number marking on the semantics of counting and a little-understood element of counting expressions, i.e., optional numeral classifiers.

The analyses to be presented in this dissertation explain the English and Turkish data in a comparative and mostly unified way, as well as offering novel insights into the variations between the two. In the semantics of number marking, the main contribution that I make concerns the semantics of kind reference, the effects of which are revealed more significantly in Turkish than in English, extending to phenomena that pertain to naming kinds and pseudo-incorporation. The findings are also interpreted with respect to the semantics of counting, the nature of which is elucidated by the analysis of optional classifiers. The investigation of Western Armenian and Persian reveals striking similarities between these languages and Turkish, which provides cross-linguistic support for my claims regarding the semantics of number marking and kind reference, as well as counting and the optional classifier system. [1]

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[1] While the English data comes from the literature and informal conversations with native speakers around me, the Turkish data is based on the judgements of 15 native speakers including myself. The Western Armenian

To help get our empirical bearings, below I present some sampling of data that will be the starting point of the investigation, followed by a sketch of how the analysis goes.

1 The Puzzle of Number Marking in Turkish

Turkish nouns, like English nouns, come in two forms. One is unmarked for number (Turkish *kitap*; English *book*) and one is morphologically marked plural (Turkish *kitap+lar*; English *book+s*). While unmarked nouns in English are readily identified as singular terms since they consistently give rise to singular interpretations, the picture is less clear for Turkish unmarked nouns, which sometimes behave like singular terms and sometimes like plural terms.

Turkish unmarked nouns behave like plural terms yielding number neutral interpretations in three main positions: the non-case-marked object position, as in (1a), the position preceding the existential copula *var*, as in (1b), and the predicate position, as in (1c).

(1) a. Ali **kitap** oku-du.
         Ali book read-PAST
         'Ali read one or more books.'

     b. Oda-da **fare** var.
         room-LOC mouse exist
         'There is a mouse/are mice inside.'

     c. Ali ve Merve **çocuk**.
         Ali and Merve child
         'Ali and Merve are children.'

Furthermore, in Turkish all numerals combine with singular nouns, as opposed to languages like English where with numerals higher than 'one' the noun always appears in the plural form. The contrast is given in (2a) and (2b). In one view of numeral semantics where

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data was collected from 8 native speakers, 6 from Istanbul and 2 from Beirut. The Persian data was collected from 9 native speakers, 8 from Tehran, 1 from Tabriz. The data collection was done through informal interviews and a questionnaire where the consultants were asked to rate the sentences from 1 (very bad) to 7 (very good) in a given context. I also appeal to Mandarin data during the course of the analysis which is sourced from the literature.

numerals are treated as restrictive modifiers (Link, 1983), this could be a potential sign for the number neutrality of unmarked nouns.

(2)   a.   one book/two books

        b.   bir kitap/ iki kitap(*-lar)
              one book two book-PL
              'one book/two books'

On the other hand, Turkish unmarked nouns behave like singular terms in case-marked argument positions, receiving a strictly singular and definite interpretation. I exemplify this with a case-marked direct object below.

(3)   Ali **kitab-ı**   oku-du.
       Ali book-ACC read-PAST
       'Ali read the book.'

       Not: 'Ali read (the) books.'

There are two approaches one can take in addressing this challenge. One can take unmarked forms to be fundamentally number neutral/plural terms or one can take them to be fundamentally singular terms. No matter which approach is adopted, the challenge is to account for those cases where the base assumption does not work. On the view that unmarked nouns are essentially number neutral terms, one needs a principled account for instances when that neutrality is not in evidence; on the view that unmarked nouns are essentially singular terms, one needs a principled account for instances where the singularity is not in evidence.[2]

There are two more issues that the semantics of number marking in Turkish has a direct bearing on. First, in Turkish, like in English, unmarked as well as plural forms can refer to kinds, as shown in (4a), though with some well-attested differences. To exemplify one, kind reference with plural terms is compatible with reciprocals, kind reference with unmarked

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[2]A third potential approach, namely that they are ambiguous between being singular and plural, may reduce to the first approach, since a number neutral denotation represents both.

terms is not, as shown in (4b).

(4)   a.   **Dinozor-lar-ın/ Dinozor-un**   nesl-i   66 milyon 38 bin   yıl
           dinosaur-PL-GEN dinosaur-GEN generation-3POSS 66 million 38 thousand year
           önce tüken-di.
           ago   end-PAST
           'Dinosaurs/The dinosaur became extinct 66 million 38 thousand years ago.'

      b.   **Kedi*(-ler)** birbiri-ne   saldır-ır.
           cat-PL   each.other-DAT attack-AOR
           'Cats attack each other.'

Then, one needs to take the nature of kind reference and the disparity between the two forms into consideration while accounting for the semantics of number marking in Turkish.

Second, Turkish has one more property that distinguishes its numeral constructions from English ones, the existence of an optional element appearing between the numeral and the noun, i.e.*, tane,* as exemplified in (5). Following the general convention, it will be called *optional (numeral) classifier* from now on.

(5)   a.   bir (tane) kitap
           one CL   book
           'one book'

      b.   iki (tane) kitap(*-lar)
           two CL   book-PL
           'two books'

The investigation of this classifier will help us to understand the semantics of counting expressions better. However, it is essential in understanding how the optional classifier system fits the number marking semantics in Turkish and whether its absence in English points to a difference between the two languages in this respect. Furthermore, its analysis is fundamental in understanding how the optional classifier system differs from obligatory classifiers found in languages like Chinese. Specifically, it will be important in determining where Turkish nominal semantics stands with respect to the nominal semantics of such languages.

2   The Ingredients of the Analysis

Addressing the issues presented above, this dissertation claims that Turkish unmarked nouns are semantically singular, just like English unmarked nouns, despite cases where they seem to act as number neutral nouns. Similarly, it will be shown that Turkish plural nouns are number neutral, just like English plural nouns (see Krifka 2003, Sauerland et al. 2005, Spector 2007, and Zweig 2009 for English plurals).

Let me clarify the terminology adopted in this dissertation before we begin. I refer to unmarked nouns as *bare singulars*, and I refer to nouns inflected with the plural marker as *bare plurals*. The term *bare* refers to determinerless nouns following the convention in Carlson (1977) and neo-Carlsonian studies on English bare plurals. As opposed to English, Turkish is a language which lacks an overt definite article. Therefore, the argument positions in Turkish are occupied by bare nouns even when they are definite expressions. Since they are not accompanied by an overt determiner, I will continue calling them *bare nouns* even if they bear case-marking on them.[3]

Morphological vs. semantic (un)markedness. The foundational work on the semantics of number morphology is Link (1983), after which the mereological treatment of pluralities has become a well-established tradition in the semantic literature. In Link (1983), the domain of individuals (D_e) has been claimed to include atoms and their closure under the sum operator $\oplus$. For example, the complete atomic join semilattice with a, b, and c as singular individuals include the atoms a, b, c, and the pluralities a$\oplus$b, a$\oplus$c, b$\oplus$c, and a$\oplus$b$\oplus$c, as represented in Figure 1.1. (In the rest of the dissertation, I will assume this model for ease of exposition.)

The discussion of Turkish bare noun semantics has received attention in the works of Bliss (2004), Bale et al. (2010), and Görgülü (2012) where the number neutral account has been

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[3]This dissertation does not attempt to resolve the controversial issue regarding whether Turkish has D or not in the absence of overt determiners. Although I will assume the absence of it for simplicity, the analyses to come are consistent with both views. See Kornfilt (2005, 2017) Arslan-Kechriotis (2009), von Heusinger and Kornfilt (2017) providing arguments for it, and Öztürk (2005) and Bošković and Şener (2014) providing arguments against it.

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                              a⊕b⊕c



              a⊕b           a⊕c           b⊕c




                    a             b             c
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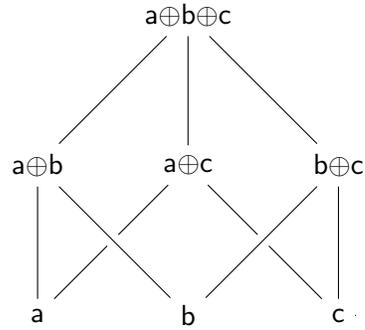
Figure 1.1: A Complete Atomic Join Semilattice

pursued for Turkish bare singulars. Namely, they claim that bare singulars denote number neutral sets, i.e., a complete atomic join semilattice. So, in this view, if in a model a, b, and c are the books, the bare singular *kitap* 'book' denotes the set shown in (6a). Accordingly, their take on Turkish plurals is that they are exclusive of atoms, denoting pluralities only. So, the bare plural *kitap-lar* 'books' denotes a strictly plural set, as shown in (6b).

(6)   a. $[\![kitap]\!] = \{a, b, c, a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\}$

       b. $[\![kitap + PL]\!] = \{a \oplus b, b \oplus c, a \oplus c, a \oplus b \oplus c\}$

This view has been very influential since it enriches the typology pairing morphologically unmarked forms with semantically unmarked denotations, and vice versa. But, of course, it is the case that this match is not attested in languages like English where the semantic reflection of morphological (un)markedness is realized in the opposite way. In other words, while unmarked nouns of English manifest themselves as singulars, marked forms, i.e., plurals, are number neutral, inclusive of both atoms and their pluralities (Krifka 2003, Sauerland et al. 2005, Spector 2007, and Zweig 2009).

This dissertation shows that Turkish actually patterns with English in this respect. The correlation between morphological and semantic (un)markedness is exhibited in the opposite direction. Namely, the morphologically unmarked form is semantically restricted to atoms, and the morphologically marked form is unrestricted to atomic or plural individuals. Defending this approach, I claim that Turkish nouns that are unmarked for number denote

atomic properties, with their number neutrality arising from construction specific factors. Accordingly, I claim that Turkish plurals have an unmarked/number neutral denotation, like their English counterparts. So, my claims regarding bare singulars and plurals of Turkish can be represented as below.

(7)   a. $[\![kitap]\!] = \{a, b, c\}$

        b. $[\![kitap + PL]\!] = \{a, b, c, a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\}$

Challenges to overcome. The number neutral interpretation of bare singulars is accounted for without compromising the singularity of bare singulars. I start by demonstrating that counting with atomic properties is also possible, in the system of Ionin and Matushansky (2006, 2019). Thus, the fact that numerals combine with singular nouns does not necessarily posit evidence for a number neutral denotation.

I also show that the number neutrality of bare singulars in each case exemplified in (1) has a construction specific source. I argue that the former two are instances of pseudo-incorporation, and that the number neutrality of unmarked nouns results from this (cf. Öztürk 2005 and Dayal 2011, 2015, among others). I further claim that their number neutrality in the predicate position does not stem from a number neutral set denotation but instead it is ensured by a special copular semantics. We will see that all of these follow from the ability of bare singulars to function as singular kind terms. To make this case, I offer a parametric analysis for pseudo-incorporation, one where incorporated nouns denote atomic properties of ordinary entities as proposed by Dayal (2011, 2015) for Hindi and Hungarian, and one where they are singular kind terms that will be shown to apply in Turkish and to cover English weak definites, as well (Carlson and Sussman 2005, Carlson 2006, Aguilar-Guevara and Zwarts 2010).

For this reason, investigating kind terms is essential not only to explore their relevance to the central claim regarding the singularity of unmarked nouns and the number neutrality of plural forms, but also to understand the number neutral behavior of bare singulars in these three cases.

Reference to kinds. In a nutshell, the technical pieces that I rely on come from Chierchia's (1998a) account of plural kind terms and Dayal's (2004b) analysis of singular kind terms. In Chierchia's system, plural kind reference occurs via the *nominalization* operation (*nom*), which is a function from properties to functions from situations s to the maximal entity satisfying that property in that situation. More precisely, a plural kind, let us say the dinosaur-kind, is an individual correlate of the property of being a dinosaur.

Kind reference via *nom* makes sets of individuals instantiating the kind semantically accessible, which is required when kind terms occur in object-level contexts (i.e., generic and episodic). Since plural kind terms are derived from the property correlate of bare plurals, shifting them back to their property denotation is possible by the *predicativization* operation (*pred*). It takes the extension of the kind and returns the set of singular and plural entities that instantiate the kind. In other words, the application of *pred* to the dinosaur-kind results in a set of atomic and plural individuals that are dinosaurs.

This is what I take to be a derived way of referring to kinds in natural language. In the literature, the data of which basically comes from English, plural kind reference is taken as the default way for such reference. My main contribution to our knowledge of kind reference will be to show that singular kind reference is actually the direct way of referring to kinds, following the reasoning given in Dayal (2004b), and as being a direct way, it is also the default way. The motivation behind this claim comes from reference to kinds in Turkish but also Western Armenian and Persian.

Dayal analyzes definite singular kind terms in English, which are also known as definite generics (e.g. *The dinosaur is extinct.*), and claims that even though kinds are conceptually plural, singular kinds are grammatically atomic, akin to group terms like *team, committee*, etc. (Link 1983 and Landman 1989). That is, singular kind terms do not allow type-shifting to the properties of individuals that are associated with the kind. When they occur with object-level predicates, they refer to the whole species under a singular representative or prototypical object reading. Therefore, even in object-level contexts, the interpretation of singular kind terms remains grammatically atomic.

We will see that Turkish kind reference, regardless of the form, patterns with English kind reference. What I add to the discussion will be the contrast between singular and plural kind terms with respect to their ability to name kinds. Particularly, I follow Jesperson (1927) in the sense that singular kind terms are names of kinds that are associated with kinds themselves directly, whereas plural kind terms are the reflection of the relation between kinds and the individuals that instantiate/realize them in the grammatical component. They ensure kind reference in an indirect way through the totality of these individuals. While Turkish has grammaticized this distinction, its status remains open for English.

This view is in line with the group-like nature of singular kind terms, which in a sense is more than the collection of the individuals realizing the kind. In virtue of this, singular kind terms have a different relation to the specimens than plural kind terms, and I call this a *belong-to* relation, as opposed to an *instantiation-of* relation (*part-of* relation) that applies to plural kind terms. Namely, $belong\text{-}to(y, x)$ is true iff y *belongs to/is a member of* the kind x. However, there is no type-shifting operation that takes us from the singular kind term to the ordinary individuals associated with that kind. The conceptual plurality is sufficient to make it possible for predicates like *gather* to take singular kind terms as arguments. It does not suffice to make it possible for distributive elements that require grammatical access to object-level pairs of individuals.

However, I argue that there are two cases where the conceptual *belong-to* relation is established in the grammatical component, one happens in pseudo-incorporation and the other in the predicate position. We will also see that these two cases reveal the difference between singular and plural kind reference as a blocking effect on plural kind terms.

Counting and Optional Classifiers. Finally, I explore how the optional numeral classifier *tane* fits the number marking system employed in Turkish the analysis of which illuminates the semantics of counting in general. The account aims at explaining the two issues raised above: First, English lacks an element of this type, and given that Turkish patterns with English in its number marking semantics, this disparity requires attention within the broader

purpose of understanding the semantics of number marking. Second, Turkish has a distinguishing number marking system in contrast to Chinese-like languages, which is also reflected on its reference to kinds. However, Turkish resorts to a classifier system like these languages, though it is not exhibited obligatorily.

I start the analysis by comparing *tane* with obligatory classifiers based on their status within the nominal semantics of the languages that bear them. Such classifiers are argued to be mediators between numerals and nouns that uniformly denote kind terms, and their role is to make the atomic level of the kind term available for counting (Krifka 1995, Chierchia 1998b). I show that *tane* neither combines with kind terms nor has an atomizing role in any other way. Instead, it directly takes properties that are already atomic. I propose that while obligatory classifiers serve counting having an atomizing role on kind denoting nouns following Krifka (1995) and Chierchia (1998b), optional classifiers are responsible for counting itself. More specifically, following Scontras (2014), I argue that numeral constructions universally bear a cardinal head that denotes the cardinality measure function. Optional classifiers are the overt realization of this cardinal head, and Turkish simply differs from languages like English in having the option of overtly realizing it in its numeral constructions.

Since our knowledge of optional classifiers is extremely limited, with an aim to bring new insights to bear on this construction, the findings are compared with two more optional classifier languages, Western Armenian and Persian that happen to be spoken in areas geographically close to Turkey. The analysis of these languages shows that they pattern with Turkish in the semantics of number marking and optional classifiers (cf. Sigler 1996, Borer 2005, Bale and Khanjian 2008, 2014, Khanjian 2013 for Western Armenian, and Gomeshi 2003, Gebhardt 2009 for Persian).

The (non-)optionality of optional classifiers. One other aspect of this little-known element of counting that I address in this dissertation is its optional status. I show that there is more to this issue than meets the eye, since the presence of *tane* creates restrictions in the interpretation of numeral constructions. The most notable effect is on their definite/indefinite

interpretations. While numeral constructions without *tane* can be both definite and indefinite, ones with *tane* exclusively have indefinite interpretations. However, the comparison with Western Armenian and Persian indicates that the indefiniteness associated with *tane* is not an inherent property of the optional classifier system, but rather a language-specific choice. Nevertheless, the two forms of numeral constructions in Western Armenian and Persian exhibit variation, albeit somewhat differently, showing that the optional classifiers are not optional in semantic terms in these languages, either. This dissertation does not offer an explanation for this variation, but it contributes to our knowledge of classifiers by illustrating the following case: Languages that have opted for realizing the cardinality measure function with an overt head while the covert counterpart is already available have also chosen to attribute additional roles/restrictions to its interpretation. Namely, although optional classifiers are optional in being the overt realization of the cardinal head, they have a non-optional status in the interpretation of numeral constructions that they reside in.

To wrap up, each of the points addressed above has non-trivial implications for cross-linguistic variation and I hope to shed light on them in the chapters that elucidate the problems.

3   The Thesis, Briefly

Below, I provide a brief summary of the dissertation, highlighting the core facts and claims, categorizing them under the following main topics which form the basis of the next four chapters, respectively: (i) the semantics of number marking, (ii) the source of the number neutrality of bare singulars, (iii) the implications for the semantics of counting and optional numeral classifiers, and finally (iv) the investigation of the (non-)optional status of optional classifiers.

3.1 The Semantics of Number Marking

Chapter 2 presents the first part of the investigation, i.e., the semantics of number marking, and aims at showing that Turkish unmarked nouns are semantically singular and that Turkish plural nouns are number neutral, just as in English.

I first examine the case for number neutrality focusing on the line of thinking pursued in Bliss (2004), Bale et al. (2010), and Görgülü (2012). Specially, I discuss the motivation behind this account, which is based on the number neutral interpretation of bare singulars in the three cases given in (1) in Section 1 and the facts of Turkish numeral constructions.

I discuss the challenges that this approach has to tackle with. The main problem is the fact that bare singulars are interpreted as strictly singular and definite in case-marked argument positions. One possible solution for this challenge that we will discuss is to derive their singularity via a competition based-approach. This is in line with the claim that in Turkish bare plurals are strictly plural, an approach adopted by the advocates of the number neutral view of bare singulars. Crucially, I show that the competition account is indefensible since Turkish bare plurals are actually number neutral, inclusive of both atoms and their pluralities. The evidence for this that I provide is their number neutral interpretation in downward-entailing contexts and questions, following the account of number neutrality in Krifka (2003), Sauerland et al. (2005), Spector (2007), and Zweig (2009) for English bare plurals.

Taking the singular interpretation of bare singulars as their basic denotation, I take up the challenge imposed by their seemingly number neutral behavior. I first show that counting with atomic properties is a semantically defensible position (Ionin and Matushansky 2006, 2019), as mentioned above. I then explain how number neutrality arises from pseudo-incorporation in the non-case marked direct object position. We will see that the motivation comes from facts related to modification of bare singulars occurring in these positions. Furthermore, I demonstrate that similar effects are also observed in the behavior of bare singulars in the predicate position.

The last section of Chapter 2 deals with the analysis of singular and plural kind terms in Turkish and how their behavior fits the central claim. The analysis builds on the accounts proposed in the literature for kind reference in English and other languages, while highlighting aspects that are made visible due to the facts in Turkish.

3.2 Bare Singulars and Number Neutrality

In Chapter 3, I elaborate on my explanation regarding the source of number neutrality in the three construction specific cases: the non-case-marked object position, the position preceding the existential copula *var*, and the predicate position. Above I have categorized the former two under the phenomenon of pseudo-incorporation and pointed to a special copular semantics that is responsible for the latter.

I start the investigation by analyzing pseudo-incorporation. Dayal (2011, 2015), mainly focusing on pseudo-incorporation in Hindi, argues that pseudo-incorporated singular nouns denote an atomic property of ordinary individuals and they modify the verb, resulting in a predicate of sub-types of events. Dayal shows that the number neutral interpretation associated with pseudo-incorporated nouns in Hindi is available with atelic events that allow iterative interpretations or habitual events. The evidence she provides for this is the fact that in telic aspect, only a strict singular interpretation is possible. Dayal also supports this view with a contrast in Hungarian with respect to verbs like *collect* and *gather*, which allow incorporation with both singular and plural nouns and verbs like *compare, unite, reconcile*, etc., which disallow incorporation with singular nouns.

These effects when applied to Turkish reveal a surprising cross-linguistic difference. This indicates that the number neutrality delivered by Turkish pseudo-incorporation requires a different explanation than the one for Hindi and Hungarian, calling for a parametric analysis for the phenomenon. One way is already argued to be through atomic properties of ordinary entities in Dayal (2011, 2015). This chapter offers an analysis for the other way. I argue that pseudo-incorporation in Turkish occurs with singular kind arguments which also deliver a number neutral interpretation. In making this case, I draw an analogy

with weak definites of English which are analyzed in similar terms by Aguilar-Guevara and Zwarts (2010) (cf. Carlson and Sussman 2005 and Carlson 2006).

The discussion in this chapter includes differences of pseudo-incorporated arguments from case-receiving canonical arguments, especially case-marked singular kind arguments. It also shows differences with plural kind terms that are related to the distinct grammatical profiles of singular and plural kind terms. The issues of adjacency and the lack of case-marking in pseudo-incorporation are addressed briefly from a cross-linguistic point of view.

While pseudo-incorporation is typically associated with direct objects, subject pseudo- incorporation has been shown by Öztürk (2005, 2009) to be possible in Turkish, both as agent (transitive and unergative verbs) and theme (unaccucative verbs) pseudo-incorporation, though to a limited extent. The analysis proposed here also accounts for this phenomenon, which further explains the number neutrality of bare singulars occurring in the position preceding the existential copula *var*.

Finally, I analyze bare singulars that can be predicated of both singular and plural subject terms in the predicate position. I propose that such bare singulars are singular kind terms, analogous to the case of pseudo-incorporation, and provide crucial empirical evidence for this through the types of adjectival modification allowed. I argue that the occurrence of singular kind terms in the predicate position is a way of specifying a kind that the referent of the subject term is associated with, which I call *kind specification*. This is what makes it possible for bare singulars to be predicated of plural as well as singular subjects.

3.3   Counting and Optional Classifiers

After establishing the particulars of the semantics of number marking and kind reference in Turkish in Chapters 2 and 3, I start the third part of the investigation in Chapter 4, i.e., the implications of our findings for the semantics of counting and optional classifiers.

As stated above, numeral constructions come in two forms in Turkish: The form where a numeral and a noun combine directly, and the form where besides a numeral and a noun,

we encounter a numeral classifier in between the two. In both cases, the noun appears in the singular form regardless of the numeral. In English, in contrast, only the first form of numeral constructions is possible and if the numeral is higher than 'one' the noun appears in the plural form.

The form without *tane* is first introduced and examined in Chapter 2 where I show that counting is possible with atomic properties, as briefly mentioned above. In Chapter 4, I extend the investigation and present the analysis defended here for numeral constructions built based on the semantics of *tane*.

I first analyze *tane* in a comparison with obligatory classifiers. Then, I present my analysis of numeral constructions where they are argued to bear a cardinal head which is optionally overtly realized in Turkish by *tane*, differently from languages like English. Furthermore, I discuss the specifics of the semantics offered for this cardinal head, for which I adopt a uniform approach in line with Ionin and Matushansky's (2006, 2019) view, and argue that it presupposes atomic properties, appearances to the contrary notwithstanding.

Finally, the findings are compared to Western Armenian, a language with an overt definite maker, and Persian, a bare NP language. For this, I analyze bare noun semantics in these languages and show that they significantly pattern with Turkish with respect to the correlation between morphological and semantic (un)markedness. They also behave similarly in referring to kinds, which, as in Turkish, extends to pseudo-incorporation and *kind specification* in the predicate position. Given these similarities, I also analyze their numeral constructions and optional classifiers under the same approach as adopted for Turkish.

3.4   On the Non-optionality of Optional Classifiers

Finally, Chapter 5 addresses the other aspect of optional classifiers, i.e., to what extent they represent optionality in counting. Discussing and analyzing cases where their presence causes restrictions in interpretation, I show that realizing the cardinal head overtly while a covert counterpart is already available comes at a price.

I conduct the investigation of this issue focusing on *tane* for the most part, although I also examine the behavior of Western Armenian and Persian classifiers at the end. I start by presenting the semantic differences that the presence of *tane* creates in terms of (in)definiteness. As mentioned above, unlike numeral constructions without *tane,* which are capable of receiving both definite and indefinite interpretations, numeral constructions with *tane* are restricted to indefinite readings only.

To account for this variation, I argue that *tane* comes with a built-in choice function variable in the sense of Reinhart (1997) (cf. Winter 1997, Kratzer 1998) when numeral constructions that it takes part in occur at argument positions. This prevents *iota* type-shifting, which further results in the lack of definite interpretations. Numeral constructions without *tane*, on the other hand, are either associated with a choice function variable or the *iota* operator, making definiteness also available for them.

I also demonstrate that the indefiniteness of *tane* is not inviolable, and in fact there are cases where numeral constructions with *tane* receive definite interpretations. One of these cases emerges when they are modified with outer relative clauses that are situated outside of DP or numeral constructions, as opposed to inner relative clauses situated pre-nominally inside DP or numeral constructions. The other case surfaces when numeral constructions with *tane* occur in a special partitive construction. I account for these cases without compromising the indefiniteness of *tane*. Specifically, I show that even if *tane* bears a choice function variable, certain factors regulating outer relative clauses and the special partitive construction make definiteness possible for numeral constructions with it.

In the end, the investigation of Western Armenian and Persian illustrates that indefiniteness of *tane* is not a property of optional classifier languages. In both languages, numeral constructions with and without the classifier can receive definite and indefinite interpretations. Nevertheless, we will see that the presence/absence of the classifier in these languages causes variations in different ways, supporting their non-optional status in interpretation.

2

THE SEMANTICS OF NUMBER MARKING

1 Introduction

This chapter elaborates on the idea introduced in Chapter 1 that number morphology in Turkish is interpreted analogously to the way it is interpreted in English. Namely, I argue that the correlation between morphological and semantic (un)markedness is realized in the opposite direction in Turkish, as in English. Unmarked nouns, i.e., bare singulars, in Turkish are semantically marked as singular, denoting sets of atoms, and morphologically marked plurals, i.e., bare plurals, are semantically unmarked, denoting sets inclusive of both atoms and their pluralities, as claimed for English plurals (Krifka 2003, Sauerland et al. 2005, Spector 2007, and Zweig 2009).

This chapter also addresses the points on which the two languages differ, which seem to support a number neutral view of Turkish bare singulars: (i) the three positions where they yield number neutral readings, i.e., the non-case-marked object position, the position preceding the existential copula *var*, and the predicate position, and (ii) numeral constructions, where the noun is always in the singular form in Turkish, as opposed to English (under a Linkian approach for numerals).

I show that there are sound construction specific reasons for the perceived number neutrality of bare singulars, and that the facts of Turkish numeral constructions do not necessarily posit evidence for a number neutral semantics. I start by indicating that counting is also possible with atomic properties in the sense of (Ionin and Matushansky, 2006). Then, I analyze bare singulars occurring in the non-case-marked object position. I argue that they are instances of pseudo-incorporation, and the number neutral interpretation is linked to this phenomenon (cf. Öztürk 2005 and Dayal 2011, 2015, among others). I further illustrate why the number neutrality of unmarked nouns in the predicate position does not stem from a number neutral set denotation.[1]

This chapter also discusses kind terms and their relevance to the stance taken here regarding the number marking semantics, as it will inform the account of number neutrality I develop in Chapter 3. I show that Turkish, like English, can refer to kinds through singular and plural kind terms. Following Chierchia's (1998b) analysis of plural kind reference and Dayal's (2004b) analysis of singular kind reference, I argue that singular kind terms differ from plural kind terms in being grammatically (impure) atomic in Turkish as in English, though they remain true to the notion of kind, being conceptually plural. I also discuss several respects in which Turkish and English kind reference show variation with respect to the ability of naming kinds (cf. Jesperson 1927, Langford 1949, Carlson 1977, Heyer 1985, and Krifka et al. 1995).

This chapter is organized as follows: Section 2 discusses the number neutral account of bare singulars adopted by Bliss (2004), Bale et al. (2010), and Görgülü (2012). Section 3 discusses the challenges for this account accompanied by the analysis of bare plurals. Section 4 introduces the alternative view that bare singulars denote atomic properties and shows that the number neutral interpretation of bare singulars has distinct sources. Section 5 analyzes plural and singular kind reference. Section 6 concludes.

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[1]Bare singulars occurring in the position preceding the existential copula *var* are analyzed in Chapter 3.

2   The Case for Number Neutrality of Bare Singulars

In this section, I elaborate on the cases where bare singulars seem to suggest a number neutral denotation.

As indicated in Chapter 1, I adopt the mereological treatment of pluralities, where the domain of individuals (D_e) has been assumed to include atoms and their closure under sum formation $\oplus$, by the 'star' operator * (Link, 1983). In other words, * applying to a P returns the closure of P under $\oplus$ and therefore *P is a set inclusive of atoms and their sums. $[\![^*P]\!]$ is itself a complete atomic join semilattice, as represented in Figure 2.1.

(1)   a. $[\![P]\!] = \{a, b, c\}$

   b. $[\![^*P]\!] = \{a, b, c, a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\}$
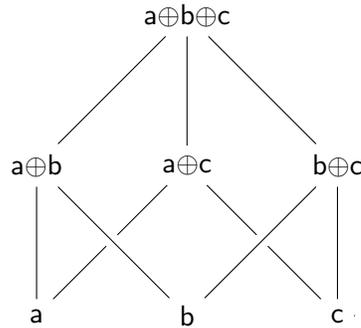
Figure 2.1: A Complete Atomic Join Semilattice

So, in a model where singular books are a, b, and c, the singular predicate *book* denotes an atomic set with the members a, b, c and the plural predicate *books* denotes a number neutral set inclusive of atoms a, b, c, and their pluralities a⊕b, a⊕c, b⊕c, and a⊕b⊕c.

As stated previously, the semantics of Turkish bare nouns has received attention in Bliss (2004), Bale et al. (2010), and Görgülü (2012), where it has been argued that bare singulars denote number neutral sets in Turkish:

(2) $[\![kitap]\!] = \{a, b, c, a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\}$

This claim is based on the fact that Turkish bare singulars yield a number neutral interpretation in the three positions: non-case marked direct object position (Bliss 2004 and Görgülü 2012), as in (3a), the position immediately preceding the existential copula *var* (Görgülü 2012), as in (3b), and the predicate position (Bale et al. 2010 and Görgülü 2012), as in (3c), where a bare singular is predicated of a plural subject.[2] I will refer to the construction in (3b) as *the existential copular construction* from now on.

(3) a. Ali **kitap** oku-du.
         Ali book read-PAST
         'Ali read one or more books.'

     b. Oda-da   **fare**   var.
         room-LOC mouse exist
         'There is a mouse/are mice in the room.'

     c. Ali ve   Merve **çocuk**.
         Ali and Merve child
         'Ali and Merve are children.'

We have also seen that numerals in Turkish are incompatible with plurals as opposed to languages like English, as shown below.

(4) iki   kitap(*-lar)
     two book-PL
     'two books'

As a reminder, on one view of the semantics of numerals, where numerals are treated as restrictive modifiers in the sense of Link (1987), English numeral constructions are straightforward to account for. Under this view, a numeral (higher than 'one') that is of type $\langle e, t \rangle$ intersects with a plural and denotes a set consisting of only individuals with the relevant cardinality (see also Partee 1987, Link 1983, Link 1987, Landman 1989, among others). Given that numerals combine with a singular noun in Turkish, one could argue that Turkish

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[2]Thanks to a reviewer for a journal, the possibility of the bare singular *çocuk* 'child' in (3c) to be analyzed as an adjective is ruled out by the fact that it cannot be modified by an adverb such as *çok* 'very' unless it means childish.

bare singulars cannot be singular but instead they must denote number neutral sets. Indeed, Bale et al. (2010) propose precisely that. More specifically, they argue that Turkish numerals are restrictive modifiers that combine with nouns via subsective modification, as illustrated below (Bale et al. 2010, pg.10):

(5)　　a.　$[\![two]\!] = \lambda P_{pl}.\{x : x \in P_{pl} \ \& \ \exists Y \ [Y \in \text{PART}(x) \ \& \ |Y| = 2 \ \&$

$\forall z \ [z \in Y \rightarrow z \in \text{MIN}(P_{pl})]]\}$

　　　　b.　A predicate Q is of type P_{pl} iff $\forall x, y \in Q \ [x \oplus y \in Q]$

　　　　c.　$\text{MIN}(P)$ is defined iff

$\forall x, y \ [[x, y \in P \ \& \ \neg \exists z \ [z \in P \ \& \ [z < y \vee z < x]]] \rightarrow x \wedge y = 0]$

When defined $\text{MIN}(P) = \{x : x \in P \ \& \ \neg \exists z \ [z < x]\}$

In their view, Turkish numerals are functions from number neutral denotations to one of their subsets consisting of all and only the pluralities that are composed of n (number denoted by the numeral) non-overlapping (atomic) minimal parts. As the definition in (5c) states, an atomic minimal part in a predicate is the smallest possible individual that does not have a part that other members of the predicate have. Furthermore, as specified in the implication in the last conjunct of (5a), the atomic minimal parts have to be included inside the original predicate that the numeral combines with. Based on this, the application of $[\![iki]\!]$ to $[\![book]\!]$ results as the following:

(6)　　$[\![iki]\!]([\![kitap]\!]) = [\![iki]\!](\{a, b, c, a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\}) = \{a \oplus b, a \oplus c, b \oplus c\}$

The result is defined since the numeral semantics requires the denotation of the noun that it combines with to include the non-overlapping minimal parts of the pluralities that are members of the output set. These minimal parts are a, b, and c in (6) and they are members of the number neutral set denoted by *kitap* 'book'.[3]

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[3]Although it has not been spelled out in Bale et al. (2010), when a predicative numeral as in (6) occurs in argument positions it can either be associated with the existential force to yield indefinite readings or undergo *iota* type-shifting to yield definite readings. We will discuss indefinite and definite readings of numeral constructions in Chapter 5.

Plural nouns cannot combine with numerals since in Bale et al.'s view, Turkish bare plurals are exclusive of atoms, denoting pluralities only, as also argued in Bliss (2004) and Görgülü (2012). This is shown in (7a).[4] In other words, although they are plural properties meeting the condition in (5b), they do not include the minimal atomic parts of the output set, i.e., a, b, and c, in their denotation. Therefore, the combination of plural nouns with numerals is undefined, as represented in (7b).

(7)   a. $[\![kitap + PL]\!] = \{a \oplus b, b \oplus c, a \oplus c, a \oplus b \oplus c\}$

      b. $[\![iki]\!]([\![kitaplar]\!]) = [\![iki]\!](\{a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\}) = $ undefined

To wrap up, the number neutral interpretation of bare singulars in the three positions discussed above as well as the fact that numerals combine with singular nouns are in line with the view that bare singulars denote number neutral sets in Turkish. In the following section, I will challenge this view.

3   The Case against Number Neutrality of Bare Singulars

Although they yield a number neutral interpretation in the three cases shown above, bare singulars are interpreted as strictly singular and definite in case-marked argument positions, i.e., case-marked subject, direct object, and indirect object positions. These are exemplified in (8a), (8b), and (8c), respectively.[5]

(8)   a.   **Çocuk** ev-e   koş-tu.
           child   home-DAT run-PAST
           'The child ran home.'

           Not: 'The children ran home.'

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[4]The evidence that Bale et al. (2010) use for their strict plural account of Turkish bare plurals is the fact that they can be predicated of plural subjects, but not singular subjects. The details of the behavior of bare nouns in the predicate position will be discussed in Section 8 in Chapter 3.

[5]Turkish lacks an overt definite article and both bare singulars and plurals can occupy argument positions. The general consensus about subjects is that they receive a null nominative case marker. However, in Section 4.4 in Chapter 3, we will see that subjects can also be caseless under certain conditions. See also Johanson (1977), Kornfilt (1984, 1997, 2009), and Heusinger and Kornfilt (2005).

    b.   Ali **kitab-ı**   oku-du.
           Ali book-ACC read-PAST
           'Ali read the book.'

           Not: 'Ali read the books.'

    c.   Ali **çocuğ-a** kitab-ı   ver-di.
           Ali child-DAT book-ACC give-PAST
           'Ali gave the book to the child.'

           Not: 'Ali gave the book to the children.'

The challenge for treating bare singulars as number neutral, then, is to account for these cases where they receive a singular interpretation. Although this issue has not been addressed by the advocates of the number neutral view, one possible solution would be to derive their singularity in these cases as a conversational implicature via a competition based-approach. This would be possible if bare plurals were exclusive of atoms, denoting pluralities only. As mentioned above, Bliss (2004), Bale et al. (2010), and Görgülü (2012) adopt this approach for Turkish bare plurals.

Here is how the competition between number neutral bare singulars and strict plurals could result in the singular reading of bare singulars as in (8): Imagine that one utters the sentence in (8b). Based on scalar reasoning, the hearer assumes that the speaker will convey the strongest information that (s)he believes to be true. A sentence S1 is stronger/more informative than a sentence S2 iff S1 is true in fewer scenarios than S2 (Grice, 1975). In that case, the plural version of (8b) is more informative since it would only be true if Ali read more than one book. The sentence (8b) is less informative because it would be true if Ali read one or more books. Then, hearing (8b), the hearer assumes that the more informative alternative must be false, and interprets the sentence as 'Ali read exactly one book'. The same result is obtained if the competition holds under Maximize Presupposition, which favors the one with the stronger presupposition, i.e., the bare plural in this case, when two forms compete, on the condition that no presupposition violation occurs (Heim, 1991).

However, this competition account is untenable since bare plurals in Turkish are actually inclusive of atoms and their pluralities, as represented in (9). This further constitutes a

case against the number neutral view of bare singulars given that we can no longer account for their singular interpretation as a conversational implicature.

(9) $\llbracket kitap + PL \rrbracket = \{a, b, c, a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\}$

Let me illustrate this point: Krifka (2003), Sauerland et al. (2005), Spector (2007), and Zweig (2009) argue for a number neutral account of bare plurals in English. In these works, it has been observed that although bare plurals contain multiplicity as part of their denotation in positive contexts, they lose that requirement in downward entailing contexts and in questions. In other words, the 'more than one' meaning does not seem to be strictly part of their interpretation. The perceived multiplicity arises as a result of a conversational implicature in positive contexts.

This observation also holds for Turkish bare plurals as evidenced by the example in (10).[6] If we had gone to the forest and come across one bear, it would be bizarre to respond to the question in (10) with 'no'. Because seeing one bear answers the question in (10) positively, the denotation of the bare plural *ayılar* cannot be 'more than one' bear.[7]

(10)   Orman-da **ayı-lar-la**   karşılaş-tı-nız   mı?
         forest-LOC bear-PL-COM come.across-PAST-2PL QUEST
         'Did you come across bears in the forest?

   a.   Evet, bir tane gör-dü-k.
        yes, one CL   see-PAST-1PL
        'Yes, we saw one.'

   b. #Hayır, bir tane gör-dü-k.
        no,   one CL   see-PAST-1PL
        'No, we saw one.'

---

[6]Görgülü (2012) argues for the strict plural view providing examples of plurals in the existential copular construction with a possesive meaning where they exhibit an exclusive reading, e.g., *Çocuklarınız var mı?* 'Do you have children?' This is one place where bare singulars have a number neutral reading as stated above. I suggest that this could have a potential effect on the seemingly exclusive reading of bare plurals. As is clear in the examples below, once we move away from this construction their number neutral reading becomes visible.

[7]A reviewer for a journal helpfully draws attention to the fact that the plural small *pro* is also number neutral. For example, the sentence *Bu apartmanda merdivenleri hiç temizlemiyorlar anlaşılan.* 'In this apartment, it appears that they don't clean the staircases at all.' can be responded to with a singular subject as in *Evet, kapıcı gerçekten son derece ihmalkar.* 'Yes, the janitor is really terribly neglectful.'

Now, let us examine the occurrence of a bare plural in a positive and a negative context. In (11a), the multiplicity implicature surfaces, but in (11b), it does not.

(11) a. **Çocuk-lar** sokak-ta top oynu-yor.
    child-PL street-LOC ball play-PROG
    'Children are playing ball on the street.'

   b. **Çocuk-lar** sokak-ta top oyna-**mı**-yor.
    child-PL street-LOC ball play-NEG-PROG
    'Children aren't playing ball on the street.'

More precisely, consider a scenario where exactly one child is playing ball on the street. This situation could be described with the following sentence conveying the singularity directly.[8]

(12) Tam olarak bir (tane) çocuk sokak-ta top oynu-yor.
   exactly one CL child street-LOC ball play-PROG
   'Exactly one child is playing ball on the street.'

The core meaning of (11a) is an inclusive interpretation, as shown in (13), and it competes with the alternative statement in (12).

(13) S = One or more children are playing ball on the street.

The hearer reasons in the following way: (S)he assumes that the speaker will convey the strongest information that (s)he believes to be true and a sentence S1 is stronger/more informative than a sentence S2 iff S1 is true in fewer scenarios than S2 (Grice, 1975). Since (12) is true in fewer scenarios than (11a), it is the stronger alternative. Then, hearing (11a), the hearer will assume that the stronger alternative must be false. The truth of (11a) and the hearer's assumption regarding (12) combine to yield the following scalar meaning for (11a). Thus, the plural is interpreted as an exclusive plural.

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[8]The choice of the alternative sentence competing with the plural form shows variation in the implicature accounts. See Tieu and Romoli (2018) for an overview.

(14)   S+scalar = One or more children are playing ball on the street and it is not true that one child is playing ball on the street.

S+scalar = More than one child is playing ball on the street.

On the other hand, in the negative case, the entailment relations are reversed. Therefore, the negation of the alternative statement, which is given in (16), is weaker than the core meaning of (11b), which is given in (15). Based on this, the hearer will not make any assumptions regarding (16), therefore the core meaning of (11b) is maintained. The plural is interpreted number neutrally. If bare plurals of Turkish were strictly plural with a multiplicity condition, (11b) would be predicted to be infelicitous in this case.

(15)   S = It is not the case that one or more children are playing ball on the street.

(No children are playing.)

(16)   Tam olarak bir (tane) çocuk sokak-ta   top oyna-mı-yor.
        exactly   one CL   child street-LOC ball play-NEG-PROG
        'It is not the case that exactly one child is playing ball on the street.'

I have shown how the multiplicity reading of bare plurals arises under the scalar implicature account (Spector 2007, Zweig 2009). However, it could also be explained based on Maximize Presupposition, which, to repeat, favors the one with the stronger presupposition when two morphological forms compete, on the condition that no presupposition violation occurs (Heim 1991, Sauerland et al. 2005). In that case, the multiplicity implicature in (11a) would surface due to the stronger presupposition of the alternative sentence and disappear in (11b) due to its weaker status.

The 'one or more' reading of bare plurals is also available in other downward entailing contexts such as the antecedents of the conditionals, as in (17a) and the restrictors of universal quantifiers, as in (17b), where the bare plural *erkekler* 'men' is interpreted number neutrally.

(17) a. Eğer **erkek-ler** tarafından aldat-ıl-dı-y-sa-n,   sen de biz-e
          if   man-PL   by   cheat-PASS-PAST-COP-COND-2SG you also we-DAT
          katıl-abil-ir-sin.
          join-ABIL-AOR-2SG
          'If you have been cheated by men, you can join us.' (one or more men)

      b. **Erkek-ler** tarafından aldat-ıl-an   herkes   biz-e   katıl-abil-ir.
          man-PL   by   cheat-PASS-REL everybody we-DAT join-ABIL-AOR.
          'Everyone who has been cheated by men can join us.' (one or more men)

Therefore, in line with the argumentation for English bare plurals, I argue that Turkish bare plurals are also number neutral and the multiplicity condition in positive contexts arises as a result of a conversational implicature (see Renans et al. 2017, 2020 for experimental evidence).

In sum, we have discussed how the singular interpretation of bare singulars in case-marked argument positions might be explained under the number neutral approach for bare singulars. We have seen that one could derive the singularity interpretation via a competition with bare plurals that are argued to have a strict plural denotation. Given that Turkish bare plurals are not strictly plural, this explanation is not valid. Therefore, the problem for the number neutral view of bare singulars remains unresolved.

4   An Alternative View of Bare Singular Semantics

We have seen that taking bare singulars to denote number neutral sets may provide a simple solution for their number neutral interpretation in certain positions, but is unable to handle their singular readings in other positions. Instead, I flip the problem and take the singular interpretation of bare singulars as their basic denotation. Namely, I argue that Turkish bare singulars denote atomic predicates, as represented in (18). This means that the correlation between morphological and semantic (un)markedness is exhibited asymmetrically in Turkish as is the case for English.

(18) $[\![kitap]\!] = \{a, b, c\}$

The case of numeral constructions is straightforward to account for in this approach if we move out of an English centric view of numerals. I start by providing an account for counting under this approach before discussing the three cases where bare singulars have number neutral readings.

4.1 Counting with Atoms

So far, in the literature, numerals have been treated as both determiners of type $\langle\langle e, t\rangle, \langle\langle e, t\rangle, t\rangle\rangle$ (Montague 1974, Bennett 1974, Barwise and Cooper 1981, Scha 1981, van der Does 1992) and predicates of type $\langle e, t\rangle$ or modifiers of type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$ (Partee 1987, Link 1987, Verkuyl 1993, Carpenter 1998, Landman 2003). Among the ones who treat numerals as predicates, Link (1987) analyzes them as restrictive modifiers (see also Bale et al. 2010). However, all those studies mainly focus on simplex numerals.

Ionin and Matushansky (2006, 2019) treat numerals as modifiers of type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$. They argue that only individuals of the same cardinality can be counted, therefore, simplex numerals require atomic properties as complements. Their analysis is given in (19) and (20) (Ionin and Matushansky 2006, pg. 321). The constraint ensuring the atomicity requirement of numerals is given in (21) (Ionin and Matushansky 2006, pg. 329).

(19) $[\![two]\!] = \lambda P \lambda x. \exists S\ [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S\ P(s)]$

(20)   a. $\prod(S)(x) = 1$ iff

   S is a cover of x, and

   $\forall z, y \in S\ [z = y \vee \neg \exists a\ [a \leq_i z \wedge a \leq_i y]]$

   b.   A set of individuals C is a cover of a plural individual X iff X is the sum of all members of C: $\sqcup C = X$

(21) $[\![two]\!](P)(x)$ is defined iff $\exists n\ \forall z\ [P(z) \rightarrow |z| = n]$

Based on this, ⟦*two books*⟧ can be described informally as follows:

(22) $\lambda x \in D_e$. x is a plural individual divisible into 2 non-overlapping individuals p_i such that their sum is x and each p_i is a book.

Ionin and Matushansky show that if simplex numerals were of determiner type, then it would not be possible to derive the semantics of complex numerals, like *two hundred*. For example, if *hundred* (presumably $\langle\langle e, t\rangle, \langle\langle e, t\rangle, t\rangle\rangle$) combined with *books* (type $\langle e, t\rangle$) first, the resulting NP would be a generalized quantifier of type $\langle\langle e, t\rangle, t\rangle$. Consequently, this NP would not be able to combine with another numeral because there would be a type clash if *hundred books* (type $\langle\langle e, t\rangle, t\rangle$) combined with *two*, for instance.

Ionin and Matushansky also claim that treating numerals as predicates of type $\langle e, t\rangle$ or modifiers of type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$ with a restrictive semantics faces the same problem; the semantic composition of numerals would fail in a complex numeral construction. This time, the problem is not about type mismatch, but predicate modification would result in incorrect truth conditions. For example, *two hundred books* would denote the empty set since for no *x* is it the case that the set of atoms is equal to both two and hundred simultaneously.

In Ionin and Matushansky's analysis complex numerals are derived compositionally, i.e., *hundred books* being of type $\langle e, t\rangle$ can be a sister to *two* that is of type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$. Given the constraint in (21), it is ensured that the set denoted by *hundred books* can be a complement to the numeral *two* since the set of *hundred books* contains plural individuals of the same cardinality, i.e., 100.[9]

(23)   a.   ⟦*two hundred books*⟧ = $\lambda x. \exists S [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S \exists S' [\prod(S')(s) \wedge |S'|$ $= 100 \wedge \forall s' \in S'\ book(s')]]$

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[9]Ionin and Matushansky (2006, 2019) analyze complex numerals like *twenty-two books* as having the underlying structure of *twenty books and two books*, where the semantics of the coordinated numeral construction is derived by an additive rather than an intersective interpretation of *and*.

b. $\lambda x \in D_e$. x is a plural individual divisible into 2 non-overlapping individuals p_i such that their sum is x and each p_i is divisible into 100 non-overlapping individuals p_k such that their sum is p_i and each p_k is a book.

The crucial part of their claim is that *-s* on NP in English numeral constructions is not a genuine plural marker but in fact a number agreement marker (semantic concord). On their view, true plurals cannot combine with numerals because a plural noun such as *books* denotes a set of individuals x where each x is a plurality of books and these pluralities do not necessarily have the same cardinality. In other words, *books* in *two books* has to be semantically singular, only denoting a set of atomic individuals.

Adopting this view of numerals, we can dedicate the difference in the form of the noun in English and Turkish numeral constructions to the presence/absence of number agreement in their numeral constructions.[10]

As Ionin and Matushansky (2019) discuss, one apparent problem with their approach to complex numerals is that it overgenerates. Since all simplex cardinals are of type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$, nothing seems to prevent creating complex numerals out of random combinations, like *two twenty* to mean 'forty'. Instead, complex numerals with multiplicands are generally restricted to the powers of *ten*, like *hundred*, *thousand*, etc. However, Ionin and Matushansky discuss languages where other numbers can also serve as multiplicands productively, like 'twenty' in Mixtec and Yoruba. Therefore, they argue that the constraints on which cardinals may serve this role are an extralinguistic issue.

It is also the case that numerals do not only occur as pre-nominal modifiers, but they also appear as expressions referring to a number in different contexts, such as mathematical

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[10]Alternatively, see Scontras (2014) and Martí (2019) for the singular/plural noun difference in Turkish and English numerical expressions. Both accounts argue that bare singulars of Turkish denote atomic properties. Scontras (2014), adopting a Linkian view of numeral semantics, argues that the number head above numeral constructions determines the shape of the noun in numeral constructions. In English, it takes absolute atomicity as the basis, hence marks the result of numeral constructions with numbers higher than *one* as plural. In Turkish, it takes relativized atomicity as the basis, hence considers each individual in the denotation of the numeral constructions as an atomic individual, and marks the result as singular. Adopting a similar logic, Martí (2019) derives this distinction by Harbour's (2014) feature system, treating English nouns as having the [+/-atomic] feature and Turkish nouns as having the [+/-minimal] feature.

statements. Consider the following example:

(24)   Two and two make four.

In Ionin and Matushansky's (2006) view, such numerals belong to the same category as pre-nominal numerals, and expressions like (24) include a null noun being equal to 'Two things and two things make four things.'

However, Rothstein (2017) shows that although this paraphrase is plausible for the cases like (24), other cases suggest that pre-nominal numerals and numerals occurring as arguments cannot belong to the same category. For example, the verb *count* can be used in two different ways, counting how many things there are and naming a sequence of natural numbers, as shown in (25) (Rothstein 2017, pg. 26).

(25)   a.   I counted thirteen (things, people, books).
         b.   I counted to thirteen (#things, #people, #books).

While it is reasonable to assume that there is a null noun in (25a), since *counted thirteen* naturally invokes the question *of what*, it cannot be the case for (25b). A similar contrast also emerges when properties are ascribed directly to numbers (Rothstein 2017, pg. 27):

(26)   a.   Two is a prime number.
         b.   #Two things are a prime number.

So, we can conclude that besides their pre-nominal modifier role, numerals can also be individual denoting expressions of type n, referring to a number (see Landman 2004).[11]

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[11]Rothstein (2017) derives n type numbers from their pre-nominal use, which she claims to be of type $\langle e, t \rangle$, via Chierchia's (1998b) *nom* operator. Ionin and Matushansky (2019) claim that names of numbers are derived from their cardinal use of type $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$ by a nominalizing function (NOMNUM), which returns for any cardinal numeral the cardinality corresponding to it.

Based on this ambiguity, Rothstein has a different proposal for deriving complex cardinals. She argues that multiplicands like *hundred* have a distinct semantics from simplex numerals. She claims that the former are $\langle n, \langle e, t \rangle \rangle$ type, as shown in (27a), while the latter have a predicative denotation of type $\langle e, t \rangle$, as shown in (27b):[12]

(27) a. $[\![two]\!] = 2$

$[\![hundred]\!] = \lambda n \lambda x. |x| = 100 \times n$

$[\![two\ hundred]\!] = \lambda x. |x| = 100 \times 2$

b. $[\![two]\!] = \lambda x. |x| = 2$

The advantage of this analysis is that it does not overgenerate, since simplex numerals and complex numerals have different semantics. However, Ionin and Matushansky (2019) criticize this view based on the fact that in many languages like French, the equivalents of *hundred, thousand, etc.* do not require a multiplier to mean *one hundred, one thousand, etc.*, and in fact they cannot appear with the numeral *one*. This is also the case for Turkish, as shown in (28).[13]

(28) (*bir) yüz   kitap
      one   hundred book
      'one hundred books'

As a result, we have two analyses regarding complex cardinals at hand, one where they are derived from simplex cardinals that are argued to have the same semantic type, and the other where multiplicands like *hundred* have a different semantic type than simplex cardinals. The former comes with a constraint that only individuals of the same cardinality can be counted. Namely, under this view, in all languages, regardless whether their numerals

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[12]Rothstein (2017) argues that while complex numerals involving cardinals higher than *hundred* are derived in the syntax, the lower ones are constructed in the lexicon. She derives cardinals like *two hundred and twenty* by treating *and* as an additive operator which operates on two numbers of type n. In that view *two hundred* is first derived from *hundred* of type $\langle n, \langle e, t \rangle \rangle$, then shifted into n type by the *nom* operator. The complex number resulting from the addition of the two numbers then shifts to the predicate type. See fn 11.

[13]However, *milyon* 'million', *milyar* 'billion', etc. require the numeral *bir*. These are borrowed words, as opposed to *yüz* 'hundred' and *bin* 'thousand'. So, the difference might follow from this.

combine with singular nouns, as in Turkish, or plural nouns, as in English, cardinals universally combine with atomic properties. The plural marking on the noun in English numeral constructions is illusory reflecting morphological agreement.

In the latter view, however, English cardinals combine with plural properties, and the case of languages like Turkish could be captured by further positing an atomic property presupposition on them, resulting in an ambiguity in cardinal semantics. In a nutshell, both analyses can capture the facts with different assumptions. However, they also have problems, as stated above. The former overgenerates, the latter cannot capture the fact that in languages like Turkish and French multiplicands cannot combine with the numeral *one*.

I believe that it is not an easy task to determine which account is more appropriate. In Chapter 4, we will elaborate on the semantics of counting with simplex and complex cardinals. At this point it suffices to state that the facts of Turkish numeral constructions do not necessarily present evidence for a number neutral semantics of bare singulars. Counting is possible with atomic predicates under both accounts and this is the line that I will adopt.

4.2 The Apparent Number Neutrality of Bare Singulars

In this section, I provide evidence that the apparent number neutrality of bare singulars in the non-case marked direct object and predicate positions is not inherent to the property denotation of bare singulars, but stems from distinct sources.

Öztürk (2005) claims that non-case marked bare singulars immediately preceding the verb and occupying the direct object position repeated here as (29) are instances of pseudo-noun incorporation (PI, henceforth), a term originally due to Massam (2001).

(29)   Ali **kitap** oku-du.
          Ali book read-PAST
          'Ali read one or more books.'

Syntactically, PI-ed bare singulars form a unit with the verb, but at the same time retain

their independent phrasal status. By this unity, it is meant that (i) they immediately precede the verb occupying a VP internal position, and (ii) they are unable to undergo case-driven movements such as passivization. However, PI-ed objects can be separated from the verb for pragmatic purposes (e.g., contrastive topic or focus), as shown by Öztürk (2009), Sezer (1996), and Gračanin-Yüksek and İşsever (2011), among others for Turkish (see also Dayal 2003, 2011 for Hindi). They differ from canonical arguments, e.g., definites, quantified expressions, etc., in not bearing a case marker.

The semantics of PI has been the focus of a number of accounts (Bittner 1994, van Geenhoven 1998, Chung and Ladusaw 2004, Farkas and De Swart 2003, Dayal 2003, 2011, 2015, among others). Among these accounts, Dayal (2011, 2015) claims that PI denotes predicates of sub-types of events. According to this view, in (29) for example, the combination of the bare singular *book* and the verb *read* denotes a sub-type of the reading event type, i.e., book-reading event type. The hallmarks of this phenomenon are name-worthiness, number neutrality, and obligatory narrow scope interpretation. For now, we will be concerned with the first two.

PI is not a fully productive process. As has been noted by Mithun (1984), the combination of the incorporated noun and the verb must denote an institutionalized activity or state. Dayal (2011, 2015) uses the term *name-worthiness* for this, and locates it in a presupposition about a related generic statement. In Dayal's view, PI-ed nouns denote a prototypical theme for the activity associated with the verb, the combination of which should result in a canonically recognizable type of the activity. She exemplifies this by a contrast in Danish. While the Danish counterpart of *pig-butcher* is a good candidate for PI, the counterpart of *ostrich-butcher* is not. This is because ostriches are not native to Denmark, and therefore the activity of butchering them does not count as a canonical type of butchering.

Dayal also observes that the effects of the name-worthiness requirement of PI are prevalent in modification with PI-ed nouns. Namely, certain types of modification are not acceptable in incorporation. To exemplify one, while in Hindi *old book-selling* is possible *heavy book-selling* is not. This is because *old books* can be a prototypical theme for selling events

resulting in a canonical type of the selling activity, whereas it is harder to form this relation with *heavy books*.

Consider a similar contrast in Turkish PI:

(30)   a. İçeri girdiğimde   Ali *dini/   tarihi/   bilimsel* **kitap** oku-yor-du.
             inside when.I.entered Ali religious historical scientific book read-PROG-PAST
             'When I entered inside, Ali was doing religious/historical/scientific book-reading.'

        b. *İçeri girdiğimde   Ali *eski/ büyük/ kırmızı* **kitap** oku-yor-du.
             inside when.I.entered Ali old   big   red   book read-PROG-PAST
             'When I entered inside, Ali was reading an old/big/red book/ old/big/red books.

The modification of *book* with *religious, historical,* or *scientific* is possible, as shown in (30a), resulting in a sub-type interpretation for book-reading events. In contrast, the modification of *book* with *old* meaning *worn-out* or the adjectives *big* and *red* yield ungrammaticality, as shown in (30b), instead requiring the indefinite or plural forms. This contrasts with *old* meaning *ancient/historical*. As in Hindi, this is due to the name-worthiness requirement. While *religious/ancient/historical/scientific book* can be a proto-typical theme for reading events yielding a canonical type of the reading activity, *worn-out/big/red book* does not have such an effect on the reading event, unlike the interaction of *worn-out book* with selling or buying events.

Nevertheless, it is possible for (30b) to be grammatical in the non-case marked direct object position without indefinite or plural marking if the adjective is focused contrastively, which I exemplify with the adjectives *old* and *big* in (31).[14]

(31)   İçeri girdiğimde   Ali *ESKİ/ BÜYÜK* **kitap** oku-yor-du,   yeni/ küçük değil.
        inside when.I.entered Ali old   big   book read-PROG-PAST new small NEG
        'When I entered inside, Ali was reading an old/big book/#old/big books, not new/small.'

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[14]I thank a reviewer for making me think of this case. For some speakers, (31) is still ungrammatical.

Crucially, this use of *old/big/red book* is only possible with a singular reading, not a plural one. This contrasts with *religious/historical/scientific book*, which retains its number neutrality even when it is focused contrastively. Then, clearly (31) is not an instance of PI. Leaving its nature aside, what concerns us is the fact that when it is possible for a bare singular to appear in the non-case marked position without being PI-ed, the number neutral interpretation disappears. Based on this, I conclude that the number neutrality cannot be an inherent feature of bare singulars, but instead must be sourced from PI. We will see that this line of thinking will also apply to bare singulars occurring in the existential copular construction in the next chapter.

Interestingly, a similar situation also holds for bare singulars occurring in the predicate position. Let me elaborate on this.

In Turkish, if the subject is singular, either a bare singular or an indefinite appears in the predicate position, but if the subject is plural, a bare singular can still appear in the predicate position as opposed to an indefinite.[15]

(32)   a.   Ali (bir) **çocuk**.
                Ali a   child
                'Ali is a child.'

        b.   Ali ve   Merve (*bir) **çocuk**.
                Ali and Merve a   child
                'Ali and Merve are children.'

Given our claim that bare singulars in Turkish denote atomic properties, the fact that they can be predicated of plural subjects may seem to be a problem. However, a closer investigation reveals the opposite. Analogous to the facts of PI, when bare singulars in the predicate position are modified, they are only compatible with singular subjects, losing their ability to be predicated of plural subjects, as shown in (33). Interestingly, though, if the adjectival modifier is understood as establishing a type of the noun that it modifies then the predication is compatible with plural subjects as well as singular ones, as shown in (34).

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[15] (32a) is found weird without accompanying adverbial elements like *hala/henüz* 'still'.

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

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

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

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

This contrast in modification is not predicted if bare singulars in these structures denote a number neutral property. They would be expected to convey a number neutral reading regardless of the type of modification. Thus, the case in (33) is in line with the claim that bare singulars are atomic, though the number neutrality of cases like (34) remains to be explained.

In sum, the investigation of the constructions where bare singulars have a number neutral reading reveals even more problems for the number neutral view of bare singulars, supporting the strict singular view instead. However, we have yet to explore this construction specific number neutrality. In order to do so, I must first discuss another aspect of bare singulars, namely their status as singular kind terms, as it will be crucial for the account of number neutrality I develop in Chapter 3.

5   Conceptual vs. Grammatical Plurality

In this section, I first discuss the properties of kinds by introducing Turkish plural kind terms and then analyze singular kind terms. We will see that the differences between the two forms of kind reference constitute further evidence for the atomicity of bare singulars.

5.1 Plural Kind Terms

In Section 3, we have seen that Turkish bare plurals are like English bare plurals in yielding number neutral readings in downward entailing contexts and questions, based on which I have argued that they denote sets of atoms and their pluralities as in English. Turkish and English bare plurals are also equivalent in having the following primary readings: kind (35), generic (36), and narrow scope existential (37) (see Carlson 1977, Krifka et al. 1995, and Chierchia 1998b for English bare plurals). However, Turkish bare plurals can also have definite readings unlike English bare plurals, as represented in the translation of (37).

(35)   a.   **Dinozor-lar-ın**   nesl-i   66 milyon 38 bin   yıl   önce
            dinosaur-PL-GEN generation-3POSS 66 million 38 thousand year ago
            tüken-di.
            end-PAST
            'Dinosaurs became extinct 66 million 38 thousand years ago.'

            Literally: 'The generation of dinosaurs ended 66 million 38 thousand years ago.

      b.   **Kedi-ler** 10.8 milyon yıl   önce evrimleş-me-ye başla-mış-tır.
            cat-PL   10.8 million year ago   evolve-INF-DAT start-PERF-GEN
            'Cats started to evolve 10.8 million years ago.'

(36)   **Ayı-lar** genelde saldırgan   ol-ur.
        bear-PL usually aggressive be-AOR
        'Bears are generally aggressive.'

(37)   **Kedi-ler** dışarıda çiftleş-iyor.
        cat-PL   outside mate-PROG
        'Cats are mating outside.'

        'The cats are mating outside.'

I will first illustrate how the readings that are available in both languages are derived, then will turn to the definite reading of Turkish bare plurals.

The fact that bare plurals can be arguments to kind level predicates like *nesli tükenmek* 'be

extinct' or *evrimleşmek* 'evolve' as in (35) means that they have kind reference since such predicates only denote properties of kind individuals (Carlson, 1977). Chierchia (1998b) defines kinds as individuals that identify classes of objects with a sufficiently regular function or behavior in nature. When we talk about natural kinds we not only refer to 'well-established' biological ones, but artifacts like books and cars and more complex ones like intelligent students can be considered as kinds, as well (see also Krifka et al. 1995, Chierchia 1998b, and Dayal 2004b).

In Chierchia (1998b), bare plurals in English are argued to start as type $\langle s, \langle e, t \rangle \rangle$ and become kind terms of type $\langle s, e \rangle$ via a nominalization operation (*nom*), which is shown in (38a). *Nom* is a function from properties to functions from situations s to the maximal entity satisfying that property in that situation. In other words, a kind, let us say the dinosaur-kind, is an individual correlate of the property of being a dinosaur, as shown in (38b) (Chierchia 1998b, pg. 351).

(38)   a.   For any property P and world/situation s,

$$\cap P = \begin{cases} \lambda s.\ \iota x\ [P_s(x)],\ \textit{if}\ \lambda s.\ \iota x\ [P_s(x)]\ \textit{is in K, the set of kinds} \\ \\ \textit{undefined, otherwise} \end{cases}$$

where P_s is the extension of P in s.

        b. $\cap dinosaur = \lambda s.\ \iota x\ [dinosaur_s(x)]$

The *nom* operator is not defined for singular properties because deriving a kind term through a singular property would equal saying that the kind is realized by a single individual, but kinds cannot have a singular instance in every world (Dayal, 1992). Instead, it is natural to identify kinds with the totality of their instances in any given situation/world, therefore *nom* is only defined for plural properties.

Following Chierchia (1998b), I argue that bare plurals in Turkish are kind terms that are built on the corresponding property via *nom*. This makes it possible for them to directly combine with kind-level predicates, as in (35a), the denotation of which is given in (39).

(39) $\llbracket (35a) \rrbracket = \textit{become-extinct } (\lambda s.\ \iota x\ [dinosaur_s(x)])$

When plural kind terms combine with object-level predicates, they are type-shifted by the predicativization (*pred*) operator, which takes the extension of the kind (i.e., extension in whatever situation/world it is interpreted relative to) and returns the set of singular and plural entities that instantiate the kind (in that situation/world), as shown in (40) (Chierchia 1998b, pg. 350).

(40)   Let d be a kind. Then for any world/situation s,

$$^{\cup}d = \begin{cases} \lambda x.\ x \leq d_s, \textit{if } d_s \textit{ is defined} \\ \\ \lambda x.FALSE, \textit{otherwise} \end{cases}$$

where d_s is the plural individual that comprises all of the atomic members of the kind.

This is in line with the number neutrality of bare plurals made possible by the fact that plural kinds allow type-shifting to the properties that they are constructed from. So, in return, number neutral sets of instantiations may be retrieved from the corresponding kinds. In generic contexts, the Generic operator quantifies over these instantiations, as shown in (41), representing the denotation of (36).

(41) $\llbracket (36) \rrbracket = \textit{Gen } s,\ x\ [^{\cup\cap}bear(s)(x)]\ [aggressive(s)(x)]$

When a kind-level argument combines with an object-level predicate in an episodic context, as in (37), *Derived Kind Predication (DKP)* comes into the picture. DKP provides sort adjustment and introduces $\exists$-quantification over the instantiations of the kind provided by *pred* in a given situation. This is shown in (42) (Chierchia 1998b, pg. 364).

(42)   a.   DKP: If P applies to objects and k denotes a kind, then

$P(k) = \exists x\ [^{\cup}k(x) \wedge P(x)]$

b. $[\![(37)]\!] = mate.outside\ (^{\cap}cat) = DKP \Rightarrow \exists x\ [^{\cup\cap}cat(x) \wedge mate.outside(x)]$

DKP results in the obligatory narrow scope interpretation of bare plurals in Turkish, as has been discussed in the literature for English. This is because the sort-adjusting $\exists$-quantification is introduced locally at the level of predication. For example, (43) means that there are no atomic or plural instantiations of the dog-kind barking in the given situation, i.e., there are no dogs barking. Crucially, it does not mean that there are some dogs that are not barking today, which would be possible if bare plurals could take scope over negation.

(43)　a.　**Köpek-ler** bugün havla-mı-yor.
　　　　 dog-PL　　today bark-NEG-PROG
　　　　 'Dogs aren't barking today.'

　　　b.　$[\![Köpekler\ havlamıyor]\!] = \neg bark\ (^{\cap}dog) = DKP \Rightarrow \neg\ \exists x\ [^{\cup\cap}dog(x) \wedge bark(x)]$

The fact that plural kinds allow type-shifting to sets of instantiations can be tested with *reciprocals* and predicates like *come from different regions* which require access to the parts of these instantiations to ensure distributivity.[16] The compatibility of bare plurals with them shows that plural kinds grant access to their instantiations for distributivity. (44a) and (45a) exemplify generic and episodic contexts, respectively. In both cases, the plural kind terms are type-shifted via *pred* denoting a set of singular and plural entities instantiating the kind in the relevant situation. The reciprocal and *come from different regions* distribute over these instantiations. The truth conditions for (44a) and (45a) are roughly represented in (44b) and (45b).

(44)　a.　**Kedi-ler** birbiri-ne　　saldır-ır.
　　　　 cat-PL　 each.other-DAT attack-AOR
　　　　 'Cats attack each other.'

　　　b.　$Gen\ s,\ x\ [^{\cup\cap}cat(s)(x)]\ [\forall y, z\ [y < x \wedge z < x \wedge y \neq z]\ \rightarrow attack(s)(y)(z)]$

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[16]Schwarzschild (1996) uses these tests to show that of collective/group terms do not allow access to the members comprising them. See the following section for the details.

(45)   a. **Ayı-lar** bu hayvanat bahçesi-ne farklı   bölge-ler-den gel-di.
                bear-PL this zoo-DAT   different region-PL-ABL come-PAST
                'Bears came to this zoo from different regions.'

    b. $\exists x \, [^{\cup\cap}bear(x) \land \forall y, z \, [[y < x \land z < x \land y \neq z] \rightarrow \iota r_1 \, [region(r_1) \land$
        $came.to.zoo.from(r_1)(y)] \neq \iota r_2 \, [region(r_2) \land came.to.zoo.from(r_2)(z)]]]$

Note that in (44a) the most salient reading involves distributivity down to atomic instantiations of the kind, while in (45a) the most salient reading involves distributivity to pluralities. I set aside the reasons for this variation, as it is orthogonal to the point under discussion (see Dalrymple et al. 1994 for relevant discussion). The important point is that the plural kind term makes individual instantiations available for predication.[17]

Now let us see how Turkish bare plurals, unlike English bare plurals, can also have definite interpretations in object-level contexts, in addition to the narrow scope existential readings. This is represented in the translation of (37), but also holds for (43), (44a), and (45a). The explanation for this follows in the neo-Carlsonian approach, as discussed for other languages without determiners by Dayal (2004b). The two principles relevant here are given in (46) and (47).[18]

(46)   *Blocking Principle* (Chierchia 1998b)

    For any type shifting operation ϕ and for any X: *$\phi(X)$ if there is a Determiner D such that for any set X in its domain, $D(X) = \phi(X)$.

(47)   *Revised Meaning Preservation* (Dayal 2004b)

    $\{\cap, \iota\} > \exists$

According to (47), type-shifters apply in a certain order, as long as Blocking Principle is

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[17]This is in contrast to singular kind terms, which will be discussed in the following section.

[18]I assume that Turkish bare nouns are NPs that undergo covert type-shifting. However, equivalent results can be obtained in a DP analysis with suitable adjustments to the Blocking Principle and Revised Meaning Preservation.

respected. English and Turkish bare plurals can both shift via *nom* to yield kind-level mean-ings and their DKP-based narrow scope existential readings. Only Turkish bare plurals can also shift via the covert *iota* operator and yield definite readings, as opposed to English where it is blocked by the overt determiner *the*. The low-ranked ∃-type shift does not come into play for bare plurals in either language, ruling out the possibility of strong indefinite interpretations.[19]

In summary, bare plurals in Turkish, like bare plurals in English, become kind terms via *nom*, and receive object-level readings via *pred* and DKP, in line with their number neutrality. Unlike bare plurals in English, they can also undergo *iota* type-shifting to yield definite interpretations.

5.2 Singular Kind Terms

In this section, I will discuss the semantics of singular kind reference and its differences from plural kind reference, which constitute further evidence for the atomicity of bare singulars.

Just like bare plurals, bare singulars can also combine with kind-level and generic predi-cates, as shown in (48) and (49).

(48)   a.   **Dinozor-un** nesl-i   66 milyon 38 bin   yıl   önce tüken-di.
            dinosaur-GEN generation-3POSS 66 million 38 thousand year ago   end-PAST
            'The dinosaur became extinct 66 million 38 thousand years ago.'

            Literally: 'The generation of the dinosaur ended 66 million 38 thousand years ago.

   b.   **Kedi** 10.8 milyon yıl   önce evrimleş-me-ye başla-mış-tır.
            cat   10.8 million year ago   evolve-INF-DAT start-PERF-GEN
            'The cat started to evolve 10.8 million years ago.'

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[19]The motivations behind the revision of Meaning Preservation in Chierchia (1998b) will not be discussed, so I refer the reader to Dayal (2004b) for details. Revised Meaning Preservation and the definiteness by *iota* also apply to bare singulars. I also set aside cases with bare plurals that do not refer to kinds like *parts of this machine* (Carlson 1977, Chierchia 1998b, and Dayal 2013).

(49) **Ayı** genelde saldırgan   ol-ur.
      bear usually aggressive be-AOR
      'The bear is generally aggressive.'

However, in episodic contexts they are interpreted as strictly singular and definite, as op-posed to bare plurals, which, as we have seen, can receive number neutral existential read-ings. Compare (50) with (37) above.

(50) **Kedi** dışarıda çiftleş-iyor.
      cat   outside mate-PROG
      'The cat is mating outside.'

      Not: '(The) cats are mating outside.'

The lack of the existential reading with bare singulars is further shown by their inability to take scope under negation, as in (51), where they receive a singular and definite read-ing only.[20] The unavailability of this reading for bare singulars shows that kind reference achieved by bare singulars differs from kind reference achieved by bare plurals.

(51) **Köpek** bugün havla-mı-yor.
      dog   today bark-NEG-PROG
      'The dog isn't barking today.'

We can understand the nature of kind reference with bare singulars if we take them to be more like definite singular kind terms in English as *the dinosaur* in 'The dinosaur is extinct'. Dayal (2004b) claims that even though kinds (singular or plural) are conceptually plural, singular kinds are grammatically atomic. They differ from plural kinds in not allowing

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[20]In the preverbal non-case-marked argument position, bare singulars seem to have a narrow scope existential reading. In Chapter 3, we will see that this is due to PI. What matters for us is that bare singulars cannot receive this reading when case-marked, contrasting with bare plurals. However, profession/social role denoting bare singulars like *öğrenci* 'student' and *öğretmen* 'teacher' allow number neutral narrow scope existential readings in case-marked positions, like bare plurals: *Öğrenci kütüphaneye uğramıyor artık.* 'Students aren't going to the library anymore.' Notice, though, this interpretation is restricted: (i) The referents of these nouns have to be in abundance, massive in a sense, unlike DKP of bare plurals. (ii) It is only available in professional/report contexts. The sentence above gets an existential reading if it is uttered among teachers or it is a part of a report, for example. Since it would be misleading to generalize this restricted behavior to the broader class of bare singulars, I set aside these cases but see Chapter 4 for a more detailed discussion on them.

type-shifting to sets of instantiations.

Dayal draws an analogy with collective nouns like *team, committee*, etc. Barker (1992) and Schwarzschild (1996) argue that collective nouns as in (52a) differ from plural definites as in (52b) in being impure atomic group terms rather than simply conveying sums, in the sense of Link (1983) and Landman (1989) (see also Kleiber 1990, Krifka et al. 1995, and Zucchi and White 2001).

(52)   a.   The team voted.

b.   The players/the team members voted.

Schwarzschild (1996) further shows this by using the compatibility with reciprocals and distributive predicates like *live in different cities* as distinguishing tests. While plural definites are compatible with them, as shown in (54), collective nouns are not, as shown in (53). This shows that groups do not allow distributivity over the individuals that they consist of, as opposed to sums.

(53)   a. #The team lives in different cities.

b. #The team attacked each other.

(54)   a.   The players/the team members live in different cities.

b.   The players/the team members attacked each other.

The group term *team* in (52a) and the definite plural *the players/the team members* in (52b) are associated with the same set of entities, i.e., players (a, b, c) and their pluralities (a⊕b, a⊕c, b⊕c, and a⊕b⊕c), but their relations to these entities differ from each other. The definite plural has them as its parts, which is represented by the part-of relation $\leq$, but the group term has them as its members, which is represented by $\downarrow$ in Landman (1989). In other words, while groups are atomic elements that have no internal structure, they still retain some relation with their individual members.

Dayal treats plural kind terms as sums, which hold a part-of relation to the individuals instantiating/realizing the kind. This is reflected by $\leq$ in *pred* (see (40) above). On the other hand, she considers singular kind terms to be analogous to group terms, and claims that the relation between singular kind terms and the specimens remains only at the conceptual level. Unlike plural kind terms which are derived from the relevant property, singular kind terms are directly associated with kinds by referring to them in the taxonomic domain.

Dayal's proposal is based on the idea that common nouns systematically denote properties of ordinary individuals and properties of taxonomic individuals, i.e., (sub-)kinds. Just like other determiners like *every*, *a* and also numerals, when the definite determiner in English combines with the latter, it yields taxonomic readings. Namely, definite singular kinds are derived compositionally from the regular definite determiner and a common noun that denotes a taxonomic property, i.e., $\iota X \ [P(X)]$, X ranging over entities in the taxonomic domain. Consider the following examples (Dayal 2004b: pg. 423 & 424): (Adopting the convention in Dayal (2004b), from now on singular kinds will be represented with capital letters.)

(55)   a.   Every/a/one lion is extinct.

         b.   Two lions are extinct.

         c.   The African lion is extinct.

In (55), the domain of quantification has to be the sub-kinds of the species *lion* because the predicate is a kind-level predicate. In other words, the predicate $LION$ denotes the atomic set that has the sub-kinds *AFRICAN LION*, *ASIATIC LION*, *AMERICAN LION*, etc. as its members. (55c) differs from (55a) and (55b) in that the existence of the definite determiner imposes a uniqueness requirement. In (55c), the taxonomic property $LION$ combines with the taxonomic property $AFRICAN$ the denotation of which includes all the African kinds, including *AFRICAN LION*. The intersection of the two yields the singleton set {*AFRICAN LION*}, which type-shifts via *iota* to refer to the unique African lion-kind.[21]

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[21]See McNally and Boleda (2004) for the analysis of relational adjectives as properties of kinds, which is in

The definite determiner can also combine with a taxonomic property if the domain of quantification does not include the sub-kinds of the relevant kind. Consider the interpretation of 'The lion is extinct.' as represented below (Dayal 2004b: pg. 426).

(56) a. *become-extinct* $(\iota X \, [LION(X)])$

  b. $U_c = \{LION, WHALE, DOG\}$

  c. $[\![LION]\!] = \{LION\}$

Here, the domain of quantification is the set of taxonomic entities in (56b), which does not include the sub-kinds of lions, but instead some distinct kinds like *LION, WHALE,* etc. In that case, the extension of the taxonomic predicate $LION$ is a singleton set whose only member is the taxonomic individual *LION*, as shown in (56c). The combination of the property $LION$ with *iota* ensures the reference to the unique lion-kind. Dayal states that what level of the taxonomic hierarchy (i.e., kinds or their sub-kinds) will be relevant to the interpretation of taxonomic properties is determined by the context.

Let us now consider the behavior of singular kind terms in episodic contexts to see how the ambiguity of singular nouns plays a role in these contexts.

(57) a. The dog is barking.

  b. The rat arrived in Australia in 1770.

  c. The buffalo is roaming the prairie again.

The sentence in (57a) is a statement about a unique contextually salient dog, where the singular noun *dog* denotes a set of ordinary dog individuals. In contrast, (57b) is a statement about the rat-kind. In order for (57b) to be true one or more rats should have the property at issue but there is something more that is implied. The individual rats involved in the event stand in for the whole species as a singleton individual. This is known in the literature as the *representative object reading* but what exactly is involved in such readings has never

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line with taxonomic modification.

been formalized. There are some crucial features of these readings that we can use to guide us. One can think of the event as involving the total participation of the species or as involving some type of radical change of state for the species. For example, (57c) is only acceptable as a statement about buffalos if at a prior time, the species had become extinct or at least near-extinct. The episodic statement can then be read as a change of state from near extinction to viability. In concrete terms, modulo the representative object reading, a definite singular kind term cannot lend itself to iterative readings in the same way that ordinary definites or bare plurals can:

(58)   a.   The mouse kept entering the room.

        b.   Mice kept entering the room.

(58a) is about a single mouse that engages in the same event multiple times, while (58b) is about different instantiations of the mouse-kind engaging in distinct events of entering. It is in this sense that I take the representative object reading, as in (57b) and (57c), to be different from the DKP-based readings of plural kind terms in episodic contexts, as in (58b).

The nature of the representative object reading will be clearer in the next chapter, but for now I adopt the following generalization reached in Dayal (2004b): Singular kind terms in English are compatible with episodic contexts only if they refer to the whole species as a singleton representative/prototypical object. Namely, they are atomic terms whose only instantiation sets (if available at all) include this individual. This corresponds to singularity in syntactic terms, but they remain true to the notion of kind, being conceptually plural. Thus, the object-level readings of singular kind terms are derived by directly ensuring that the property set of this representative object includes only the properties that are associated with the kind itself.

The same facts hold for singular kind terms in Turkish. Since Turkish lacks an overt definite marker, they are realized in bare form to which the covert *iota* operator applies. I also provide further evidence with respect to their impure atomic nature by applying the tests for the accessibility of the ordinary object level introduced in the previous section. Consider

the example in (59) where the singular kind term *ayı* is used in an episodic context and is incompatible with the distributive predicate *come from different regions* (cf. with (45a)). Notice also that its English counterpart is equally bad as reflected in the translation.

(59) ***Ayı** bu hayvanat bahçesi-ne farklı bölge-ler-den gel-di.
       bear this zoo-DAT   different region-PL-ABL come-PAST
       Intended: 'Bears/*The bear came to this zoo from different regions.'

The sentence in (59) shows that singular kind terms do not allow distributive predication to entities we intuitively associate with them. Otherwise, they would yield grammatical results with these tests, just like plural kind terms. Since singular kinds are impure atomic, the denotations of bare singulars in object-level contexts as in (50) must be derived independently of their kind reference. Following Dayal, I take bare singulars to be ambiguous in denoting atomic sets of ordinary and taxonomic/kind individuals. In cases like (50), bare singulars denoting atomic properties of ordinary objects are type-shifted via *iota* to yield singular definite readings, as shown in (60a). However, in cases like (48), *iota* combines with a bare singular denoting an atomic property of kinds to yield a singular kind interpretation, as shown in (60b). Furthermore, when a singular kind term refers to the species under the representative object reading, as exemplified in (61a), its taxonomic denotation comes into play.

(60) a. $[\![(50)]\!] = mate.outside(\iota x\ [cat(x)])$

      b. $[\![(48)]\!] = become\text{-}extinct(\iota X\ [DINOSAUR(X)])$

(61) a. **Bilgisayar** bu ülke-ye çok geç gel-di.
          computer   this country-DAT very late come-PAST
          'The computer reached this country very late.'

      b. $reach.this.country.late(\iota X\ [COMPUTER(X)])$

Similarly, singular kind terms are acceptable in generic sentences if they refer to the whole species via a singleton representative object per situation, as shown in (62) (Dayal 2004b:

pg. 431). This is also the case in Turkish, as exemplified in (49) above.

(62)   The dog barks when it is hungry.

The fact that singular kind terms block access to the instantiations also holds for generic contexts, as evidenced by their incompatibility with reciprocals (cf. with (44a)).[22]

(63)   ***Kedi** birbiri-ne   saldır-ır.
         cat   each.other-DAT attack-AOR
         Intended: 'Cats attack each other./*The cat attacks each other.'

Now let us take a moment to see what these data imply for the alternative view of bare singulars as number neutral. If bare singulars were number neutral, we would expect them to have plural kind reference. Namely, bare singulars would undergo type-shifting by *nom* to refer to kinds and get instantiated by *pred* in generic and episodic contexts. Hence, they would have DKP-based narrow scope existential readings and be compatible with distributivity, making them akin to plural kind terms. Reference to kinds, therefore, is another problem for the number neutral view of bare singulars. The strict singularity of bare singulars and the number neutrality of bare plurals in Turkish defended here on the other hand find support from the phenomenon of reference to kinds.

To sum up, as in English, Turkish bare plurals are kind terms whose object-level readings are derived via *pred* and DKP. Unlike English bare plurals, they can also be type-shifted via *iota* and have definite readings. Turkish bare singulars denote atomic properties of ordinary individuals and atomic properties of (sub-) kinds. In kind-level contexts, their kind-level property denotation shifts via *iota* to yield singular kind readings. In object-level contexts, their ordinary individual property denotation shifts via *iota* to yield singular

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[22]Unlike (63), the generic version of (59) is acceptable to some speakers: *Ayı bu hayvanat bahçesine farklı bölgelerden gelir.* 'The bear comes to this zoo from different regions.' It does not express generic situations each of which consists of bears coming from different regions. Rather, the distributivity is over the situations/events that the generic operator quantifies over. So, in situation 1, they come from Asia, in situation 2, from Africa, etc. This is expected given the impure atomic nature of singular kind terms.

definite readings. English singular nouns only differ in combining with the overt definite article in these cases.

5.3   Comparing Singular and Plural Kind Terms

We have seen the arguments for distinguishing between plural and singular kind terms with respect to their relationship to the ordinary entities that they are conceptually connected to. In formal terms, we can distinguish between them by positing two different relations, to explain the differential behavior of singular and plural terms presented above.

Drawing on the familiar analogy to sums and groups, I keep the the *part-of/instantiation-of* relation that plural kinds stand in with their instantiations separate from the relation singular kinds stand in with the individuals that we intuitively associate with them. I represent the latter as a *belong-to* relation, i.e., $belong\text{-}to(y, x^K)$, where x^K is an atomic kind and y is an individual corresponding to the specimens of that kind. So, a formula $belong\text{-}to(y, x^K)$ is true iff y *belongs to/is a member of* the kind x^K. In other words, although singular and plural kind terms are associated with the same set of atomic and plural entities, their relations to these entities differ.

Notice also that while the *part-of/instantiation-of* relation is reflected by *pred*, there is no type-shifting operator that establishes the $belong\text{-}to$ relation in the grammatical component. Namely, an operator that takes a singular kind term and returns a set of individuals that belong to its referent is not available (i.e., $\lambda x^K \lambda y. \ belong\text{-}to(y, x^K)$). Thus, although singular kinds are conceptually related to the specimens that belong to them, this relation is not represented in the grammar, following Dayal (2004b). However, in Chapter 3, I will argue that there are two cases where the $belong\text{-}to$ relation is established in specific constructions in the grammar; one happens in pseudo-incorporation and the other in the predicate position.

To sum up, the distinction between the two forms of kind reference as sums vs. taxonomic groups can be represented as in (64), based on Carlson (1977) and Chierchia (1998b) for the first and Krifka et al. (1995) for the second.

(64)   a.   Plural kind reference

$\cap$lion

a   b   c   a$\oplus$b   ...

b.   Singular kind reference

MAMMAL

...DOG...   **LION**   ...WHALE...

AFRICAN LION   ASIAN LION   CAPE LION   ...
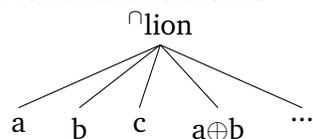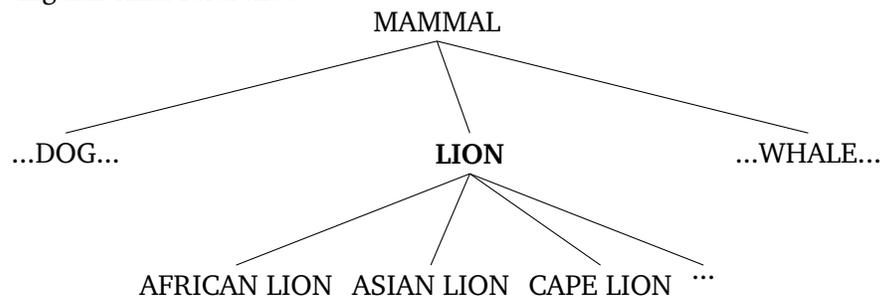
So far, I have emphasized the fact that plural kind terms differ from singular kind terms in Turkish analogously to English with respect to object-level individuals associated with them. Now, I would like to draw out some respects in which reference to kinds in the two languages is different. There are two contrasts, in particular, that are revealing.

The first contrast bears on the idea that kind referring nouns are names of kinds. As Carlson (1977) observed, the following seems to reflect this fact transparently (Krifka et al. 1995: pg. 65):[23]

(65)   The liger is/ Ligers are so called because it is/ they are off-spring of a lion and a tiger.

A case which can be considered as a corresponding construction to (65) in Turkish involves the *dediğin* 'that you call' construction exemplified below. Surprisingly, however, this is only possible with the singular kind term:[24]

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[23]See also Langford (1949), Heyer (1985), Krifka et al. (1995).

[24]This construction is usually used in generic contexts though it is also good with kind-level predicates, as shown below. It is compatible with episodic contexts only if the reference is to a kind. Addition of *dediğin* would not be good in formal contexts because it adds an informal flavor to the interpretation.

(66) **Bilgisayar(*-lar)** dediğin   Charles Babbage tarafından icat ed-il-di.
      computer-PL   that.you.call Charles Babbage by   invent-PASS-PAST
      Literally: 'The kind that you call 'the computer' was invented by Charles Babbage.'

The second contrast has to do with the complement of the predicate *invent*, which also comes with an unexpected restriction on singular vs. plural kinds, as shown in (67a). Krifka et al. (1995) relate the weirdness of plural kind terms in this context to their occurrence in the object position since in the passivized version they are acceptable, as shown in (67b).

(67) a. Charles Babbage invented the computer/?computers.

      b. The computer was/Computers were invented by Charles Babbage.

In Turkish, though, plural kind terms are ungrammatical with the verb *invent* as opposed to singular kind terms regardless of their structural position, as illustrated below.[25]

(68) a. Charles Babbage **bilgisayar(*-lar)-ı** icat et-ti.
          Charles Babbage computer-PL-ACC   invent-PAST
          'Charles Babbage invented the computer.'

      b. **Bilgisayar(*-lar)** Charles Babbage tarafından icat ed-il-di.
          computer-PL   Charles Babbage by   invent-PASS-PAST
          'The computer was invented by Charles Babbage.'

Both contrasts point to a cross-linguistic difference between Turkish and English. I conclude that Turkish canonically uses the singular term for kind reference, while placing some restrictions on the contexts in which plural kind terms can be used. The *dediğin* construction shows that bare plurals cannot name a kind, in the sense required by the *so-called* construction. The unacceptability of plural terms with the verb *invent* shows a restriction in a similar sense.

This dispartiy can be understood better if we pursue Jesperson (1927) in that singular

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[25]If the plural form is used, a taxonomic interpretation arises. Namely, it means that the different types of computers were invented by Charles Babbage. These facts also hold for Western Armenian and Persian, which will be shown in Chapter 4.

kind terms are names of kinds associated with kinds themselves, whereas plural kind terms reflect the relation between kinds and their instantiations in grammatical terms. I am aware that this way of thinking does not fully account for the English case, but it offers a principled explanation for the differences between singular and plural kind terms in Turkish, opening a new path to understanding the nature of kind reference from a cross-linguistic perspective. The effects of this asymmetry will also be visible while accounting for the apparent number neutrality of bare singulars in the next chapter, but before going on let me present the proposal in a nutshell.

In the case of an invention, the instantiations of the kind are not relevant because the invention of a kind is not directly associated with its instantiations. If you invent the computer, you actually create a concept of the computer kind. Manufacturing machines that would instantiate the computer kind comes as a subsequent step. That is, kinds can be independent of their instantiations, and in such cases the singular kind term is chosen over the plural form in Turkish. In an extinction context, though, we can either refer to the kind directly with the singular form or we can make reference to the kind indirectly deriving it from the totality of its instantiations with the plural form. Because for a kind to be extinct all of the members of the species have to die, reference to the kind can plausibly be derived from its instantiations.

While the deeper reasons for cross-linguistic differences must be left to a later date, I will show in the next chapter the utility of taking singular kind terms more like proper names that refer to kind individuals directly as opposed to their plural counterparts, which represent a derived/indirect way of referring to kinds.

6 Conclusion

This chapter has explored the semantics of number marking in Turkish and concluded that the correlation between morphological and semantic (un)markedness is attested in the opposite direction as in English. That is, nouns that are morphologically unmarked for number, which I have called 'bare singulars', are semantically marked as singular, denoting sets of

atomic individuals. Nouns that are morphologically marked as plural, which I have called 'bare plurals', are semantically unmarked, denoting number neutral sets.

We have seen that bare singulars receive both singular and in certain constructions number neutral interpretations. Accordingly, we have considered two approaches one can take in addressing this challenge. One is to take them to denote number neutral sets, as is pursued by Bliss (2004), Bale et al. (2010), and Görgülü (2012). The other is to take them to denote sets of atoms, as is staked out here.

We have also seen that no matter which approach is adopted, the challenge is to account for those cases where the base assumption does not work. For the number neutral view of bare singulars, the challenge is to account for the strict singular interpretation of bare singulars, which occurs in case-marked argument positions. One possible solution for this could be through a competition with bare plurals that are argued to denote strict plural sets in this approach. However, I have illustrated that bare plurals actually denote number neutral sets following the claims made for English bare plurals in Krifka (2003), Sauerland et al. (2005), Spector (2007), and Zweig (2009).

On the other hand, the challenge for the approach pursued here is twofold. One comes from an English centric view of numerals where they are treated as restrictive modifiers in the sense of Link (1983), and the other is the number neutral interpretation of bare singulars in certain constructions. With an aim to address this issue, I have first shown that counting with atoms is possible following the line of thinking proposed by Ionin and Matushansky (2006). Then, I have provided evidence that the number neutral interpretation does not derive from a number neutral property denotation, but has construction specific sources.

Finally, I have investigated singular and plural kind terms in Turkish and shown how they fit the central claim regarding the semantics of number marking. Crucially, I have established that the nature of kind reference in Turkish is similar to the one in English, though there are significant differences with respect to naming kinds.

3

BARE SINGULARS AND NUMBER NEUTRALITY

1 Introduction

In the previous chapter, I have established the status of bare singulars as atomic terms, and argued that their number neutral interpretation has a distinct source linked to the constructions that they occur in. However, we have yet to explore the nature of this construction specific number neutrality. Recall that this is observed in three cases, i.e., the non-case marked object position, the existential copular construction, and the predicate position, as repeated below.

(1)   a.   Ali **kitap** oku-du.
            Ali book read-PAST
            'Ali did book-reading.' (one or more books)

        b.   Oda-da **fare** var.
            room-LOC mouse exist
            'There is a mouse/are mice in the room.'

        c.   Ali ve   Merve **çocuk**.
            Ali and Merve child
            'Ali and Merve are children.'

The previous chapter has categorized the former two as instances of pseudo-incorporation (PI), and briefly mentioned that the number neutrality in the latter is derived from a special copular semantics. I will now elaborate on the details of the explanation for each case. Mainly, I claim that bare singulars occur as singular kind terms in these constructions and that these constructions have special functions that make it possible for the conceptual *belong-to* relation to be established in the grammatical component. This forms the basis of the number neutral interpretation that they yield.

Dayal (2011, 2015), focusing on Hindi for the most part, but also drawing on data from Hungarian, claims that PI-ed singular nouns denote atomic properties of ordinary individuals. In this theory, the number neutrality is provided by aspectual specification, being available through events that allow iterative or habitual interpretations. However, based on the contrasting facts of Turkish data, I offer a parametric account for PI, one occurring as argued in Dayal (2011, 2015), and the other occurring with singular kind terms as will be proposed here. Building on Dayal's PI analysis and Aguilar-Guevara and Zwarts's (2010) analysis of English weak definites, I argue that the latter happens through an incorporating thematic function that takes a singular kind term and forms a *belong-to* relation between the thematic argument of the verb and the referent of the kind term.

The incorporating thematic function is most commonly a theme function that derives direct object PI. However, following Öztürk (2005), I argue that subject PI is also possible to a rather limited extent through an incorporating agent function for transitive and unergative verbs or an incorporating theme function for unaccusative verbs. Bare singulars occurring in the existential copular construction with a number neutral interpretation will be analyzed as subject PI occurring with the incorporating theme function.

Finally, I argue that bare singulars can occur as singular kind terms in the predicate position participating in a special construction that I call *kind specification*. In this construction, the copula is a null operator that establishes the *belong-to* relation between the referent of a singular or plural subject term and the referent of a singular kind term. This is how bare singulars in the predicate position can be associated with singular and plural subject terms.

Crucially, in this chapter we will see the impact of the difference between singular and plural kind terms with respect to naming kinds discussed in the previous chapter as a blocking effect on plural kind terms in pseudo-incorporation and the predicate position.

This chapter is organized as follows: Section 2 reviews the properties of Turkish PI both in syntactic and semantic terms. Section 3 discusses the particulars of PI occurring with atomic properties as proposed by Dayal (2011, 2015) and shows the need for a parametric PI analysis. Section 4 presents the PI analysis offered here and discusses the details in a comparison to English weak definites. Section 5 elaborates on some issues related to PI, i.e., the adjacency requirement, the case-marking issue, and the limited productivity, from a cross-linguistic perspective. Section 6 provides an interim summary and conclusion regarding PI. Section 7 analyzes bare singulars in the existential copular construction. Section 8 investigates bare singulars occurring in the predicate position. Section 9 concludes.

2   The Nature of Turkish Pseudo-incorporation

I start by elaborating on PI in Turkish, briefly mentioned in Section 4.2 of Chapter 2. On the syntactic side, PI-ed bare singulars contrast with canonical arguments in not bearing case-marking and requiring to be linearly adjacent to the verb, though we will see in Section 5.1 that this requirement has a rather liberal status in Turkish. Nevertheless, PI-ed bare singulars seem to form a unit with the verb in that sense, but at the same time they retain their independent phrasal status (Taylan 1984, Arslan-Kechriotis 2006, Öztürk 2005). This is evidenced by the fact that they can receive modification as we have seen previously. Accordingly, they also allow coordination, as shown in (2) (Öztürk 2005, pg. 39).

(2)   Ali kitap ve   dergi   oku-du.
        Ali book and magazine read-PAST
        'Ali did book-reading and magazine-reading.'

Despite their non-canonical properties, PI-ed bare singulars can still be considered syntactic arguments of verbs, because in their presence an extra object with the same thematic role

cannot be added to the structure, as shown in (3) (Öztürk 2005: pg. 111). This contrasts with PI in Chamorro, where theme-doubling is possible (Chung and Ladusaw 2004).

(3) *Ali Romeo ve   Juliet(-i) **kitap** oku-du.
     Ali Romeo and Juliet-ACC book read-PAST
     Literally intended: 'Ali did book-reading Romeo and Juliet.'

In addition, PI-ed bare singulars block the assignment of accusative case associated with direct objects to other elements in the structure. Öztürk (2005) shows this by a contrast with unergative constructions which lack an object position. When an unergative verb is causativized in Turkish, the agent receives accusative case-marking, as shown in (4a). However, when a transitive verb is causativized, the agent receives dative case-marking, as shown in (4b). When an incorporating verb is causativized, the agent receives dative case-marking on a par with transitive verbs, as shown in (5) (Öztürk 2005: pg. 109).

(4) a. Ayşe Ali-yi   koş-tur-du.
         Ayşe Ali-ACC run-CAUS-PAST
         'Ayşe made Ali run.'

     b. Ayşe Ali-ye/*-yi   balığ-ı   tut-tur-du.
         Ayşe Ali-DAT/ACC fish-ACC catch-CAUS-PAST
         'Ayşe made Ali catch the fish.'

(5) Ayşe Ali-ye/*-yi   balık tut-tur-du.
     Ayşe Ali-DAT/ACC fish   catch-CAUS-PAST
     'Ayşe made Ali go fishing.'

Öztürk explains this on the view that PI-ed bare singulars are structurally associated with the accusative case although not receiving it themselves. This can be considered as further support for their syntactic argument status.

On the semantic side, non-case marked bare singulars bear the three hallmarks of PI, i.e., name-worthiness, number neutrality, and narrow scope interpretation (Bittner 1994, van Geenhoven 1998, Chung and Ladusaw 2004, Farkas and De Swart 2003, Dayal 2003, 2011,

2015, among others).[1] I established the first two when I introduced PI in Turkish in the previous chapter.

To repeat, name-worthiness has been identified by Dayal (2011, 2015) as a presupposition about genericity on the incorporating verb. Namely, PI-ed nouns denote a proto-typical theme for the activity expressed by the verb, the combination of which should result in a canonically recognizable type of the activity. We have seen that this requirement of PI posits some restrictions on the modification of PI-ed bare singulars, which further restrains the cases where non-case marked bare singulars can yield a number neutral reading.

Additionally, PI-ed bare singulars yield a narrow scope interpretation with respect to other scope taking elements in the structure. The example in (6) shows this effect for negation.

(6)   Ali **kitap** oku-**ma**-dı.
        Ali book read-NEG-PAST
        'Ali didn't do book-reading.' (no books)

To sum up, bare singulars occurring in the non-case marked direct object position exemplify an instance of PI carrying the most notable characteristics of it both in syntactic and semantic terms. The next step is to explain how number neutrality is made possible by this construction.

3   Pseudo-incorporation with Atomic Properties

Dayal (2011, 2015), mainly focusing on PI in Hindi, but also drawing on data from Hungarian, claims that singular nouns involved in PI denote atomic properties of ordinary individuals. In this section, I summarize this account and show that a parametric analysis is required for PI based on data from Turkish.

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[1]One other issue that is widely discussed in PI literature is their (in)ability to support discourse anaphora. As widely known, this is a very tricky empirical domain, and speakers that I have consulted do not provide uniform or generalizable judgments regarding anaphoric reference in PI. Therefore, it will not be addressed here, awaiting more systematic judgment elicitations. See Seidel (2018a, 2018b). See also Krifka and Modarresi (2016) for an analysis of referentiality in PI of Persian, which shows similarities to Turkish in many aspects.

3.1 Hindi and Hungarian Pseudo-incorporation

Dayal takes verbs to have an incorporating version besides their canonical transitive form, as shown in (7). The incorporating version takes an atomic property of ordinary individuals, rather than an individual as its theme argument. The atomic property modifies the verb, resulting in a predicate of sub-types of events, as shown in (7b) (Dayal 2011, pg. 146).

(7)   a. $[\![catch_{TV}]\!] = \lambda x \lambda y \lambda e.\ catch(e) \wedge Agent(e) = y \wedge Theme(e) = x$

        b. $[\![catch_{INC-V}]\!] = \lambda P \lambda y \lambda e.\ P\text{-}catch(e) \wedge Agent(e) = y]$,

            where $\exists e\ [P\text{-}catch(e)] = 1$ iff $\exists e'\ [catch(e') \wedge \exists x\ [P(x) \wedge Theme(e') = x]]$

        c. $[\![catch_{INC-V}]\!] = \lambda P \lambda y \lambda e.\ catch(e) \wedge Agent(e) = y \wedge \exists x\ [P(x) \wedge$

                    $Theme(e') = x]$

Below is how *mouse-catching* is derived in this account (Dayal 2011, pg. 147).

(8)   a. $[\![mouse]\!] = \lambda x.\ mouse(x)$

        b. $[\![catch_{INC-V}]\!]([\![mouse]\!]) = \lambda y \lambda e.\ mouse\text{-}catch(e) \wedge Agent(e) = y]$, where

            $\exists e\ [mouse\text{-}catch(e)] = 1$ iff $\exists e'\ [catch(e') \wedge \exists x\ [mouse(x) \wedge Theme(e') = x]]$

In this theory, the narrow scope property of PI is straightforward to account for since any element taking scope over the verb also takes scope over its nominal modifier (cf. Sadock 1980, Bittner 1994, van Geenhoven 1998, Farkas and De Swart 2003.)

The number neutrality, on the other hand, is provided by aspectual specification, namely it is available with atelic events that allow iterative interpretations and with habitual events. This is made possible by the fact that iterativity entails a plurality of sub-events and that habituality entails a quantificational structure that presupposes a plural quantificational domain. Each sub-event in an iterative context or each sub-event that forms the atomic part of a plural quantificational domain in a habitual structure has a singular individual as its theme argument. For example, in an iterative context, *Anu mouse-caught* would mean the

following: There exists an event E with sub-events of mouse-catching, each of which has Anu as its agent and a mouse as its theme.

The evidence that is provided for this argument is the fact that in telic contexts, which are defined on atomic events, the number neutrality disappears and instead PI yields a singular interpretation in Hindi. An example provided in Dayal (2011) is given in (9) (pg. 142).

(9)   anu-ne   tiin   ghanTe meN/ tiin   ghanTe tak *kitaab* paRhii
        Anu-ERG three hours   in   three hours   for book read.PERF
        'Anu read a book in three hours.' = exactly one book [Accomplishment]

        'Anu read a book for three hours.' = one or more books [Activity]

When (9) occurs with an atelic adverbial modifier such as *for three hours*, the PI-ed bare noun is interpreted number neutrally, i.e., 'one or more books'. In contrast, when it occurs with a telic adverbial modifier such as *in three hours*, the PI-ed bare noun yields a strictly singular reading, i.e., 'exactly one book'.

A similar point is made with the following example in (10) (Dayal 2011, pg. 142). Let us assume it to be uttered in a situation where Anu will choose girls maybe for a beauty contest. It can only mean that Anu chose one girl, not more than one.

(10)   anu-ne   das minaT   meN laRkii cun   lii
        Anu-ERG ten minutes in   girl   choose COMPL-PERF
        'Anu chose a girl in ten minutes.'

Finally, Hindi bare singulars are not acceptable when telicity and collectivity are combined as shown in (11), which instead requires the plural form of the noun (Dayal 2011, pg. 142).

(11)   anu-ne   tiin   ghanTe meN *kitaabeN* ikaTThaa kar liiN/   **kitaab* ikaTTaa
        Anu-ERG three hours   in   books   collect   do COMPL-PERF book   collect
        kar lii
        do COMPL-PERF
        'Anu got done collecting books/*a book in three hours.'

So, the difference created by aspectual specification clearly shows that neutrality cannot be a property of PI-ed bare singulars in Hindi.

Dayal further illustrates this point with a contrast in Hungarian PI yielded by the verbs *collect* and *gather* on the one hand, and verbs like *compare, unite,* and *reconcile* on the other hand. While both singular and plural forms of PI-ed nouns are compatible with the former, only the plural form is possible with the latter, as exemplified below (Dayal 2011, pg. 154).

(12)   a.   Mari bélyeget/ bélyegeket gyűjt.
            Mari stamp.ACC stamps.ACC collects
            'Mari collects stamps.'

       b.   Donka és én példákat/ ??példát hasonlítunk össze.
            Donka and I examples.ACC example.ACC compare together
            'Donka and I are comparing examples.'

Dayal argues that the core process involved in collection or gathering does not have a plurality requirement, whereas the core process in comparison, uniting, and reconciling does. The contrast above is compatible with the fact that PI-ed singulars denote singular properties, and the number neutrality is derived from aspectual specification. Collection presupposes a plurality of sub-events of acquiring which might involve a single item at a time. Comparison, though, requires a plurality at each sub-event. Since bare singulars do not provide this plurality, the result is infelicitous even if the event itself is iterated/pluralized.

In sum, PI in Hindi and Hungarian occurs with an atomic property modifying an incorporating verb, and the number neutrality is a by-product of aspectual specification that allows iterative/habitual events.

3.2 The Need for a Parametric Analysis

The facts of Turkish PI with respect to aspectual specification and verbs like *compare, unite,* and *reconcile* do not match with the facts of Hindi and Hungarian PI summarized above, calling for a parametric analysis.

Let me start with the interaction of aspect and PI in Turkish. Recall that the fact that the number neutral interpretation is made possible by aspectual specification allowing iterative/habitual events in Hindi PI is evidenced by the strict singular interpretation received in telic aspect. However, this is not necessitated in Turkish. Although in PI occurring with telic adverbial modification as in (13), the singular interpretation seems to be the most salient reading, as predicted by Dayal's theory, there are consultants that can access the plural interpretation equally easily, as well.

(13)   Ali bir saat-te   **araba** tamir et-ti.
        Ali one hour-LOC car   fix-PAST
        'Ali fixed a car/?cars in an hour.'

Kan (2010), for example, reports that the following example in (14) contrasts with its Hindi counterpart given in (10) above in allowing the 'one or more girls' interpretation. Imagine a context where Ali is choosing girls for a beauty contest among several candidates. (14) can either be true in a situation where he chose one girl or multiple girls in ten minutes.

(14)   Ali on dakika-da   **kız** seç-ti.
        Ali ten minute-LOC girl choose-PAST
        'Ali did girl-choosing in ten minutes.' (one or more girls)

In fact, the saliency of the singularity interpretation in telic aspect can easily be overridden with good contextual support. Consider the following example in a context where, as a group of friends, we have decided to play football, but we do not have enough people to form two teams. Then, Ali disappears saying that he will solve this problem. After half an hour, he returns with 10 people, and I explain this situation to another friend with the PI sentence in (15a) which is followed as in (15b).

(15)   a. Ali yarım saat-te   **adam** bul-muş/ topla-mış.
            Ali half   hour-LOC man   find-EVID/ collect-EVID
            'Ali did man-finding/collecting in half an hour.'

b. Bir baktık, on kişiyle geliyor. Halbuki biz onun bir kişi bile bulabileceğinden emin değildik.

'All of sudden, he came with ten people. In fact, we weren't even sure that he could find a single person.'

The sentence in (15a) shows two contrasts with respect to Hindi. First, the number neutrality is possible with telic aspect, and second, the singular form of the noun is acceptable when telicity and collectivity combine, evidenced by the felicity of the verb *topla* 'collect' above (cf. (11)). These facts show that the number neutral interpretation of Turkish PI-ed bare singulars cannot be dependent on aspectual specification but instead it must have a separate source.

A stronger case for this point can be made by the fact that unlike in Hungarian, PI-ed bare singulars are compatible with *compare*, and similar verbs like *unite*, *reconcile*, and *match* in Turkish. Consider the following examples.

(16)   a. Yelda, acele et! Daha **ödev**   karşılaştır-acağ-ız.
          Yelda, hurry.up yet   assignment compare-FUT-1PL
          'Yelda, hurry up! We still need to do assignment-comparison.'

       b. Kurul   bu akşam önümüzdeki tenis turnuvası   için **oyuncu**
          committee this evening next   tennis tournament for player
          eşleştir-ecek.
          match-PROG
          'The committee will do player-matching this evening for the next tennis tournament.'

Comparing assignments can be considered to be a common activity done among classmates and accordingly it is available for PI in Turkish, as exemplified in (16a). Similarly, matching players is also available for PI, as shown in (16b). Although name-worthy activities with *unite* and *reconcile* are harder to think, with good contextual support they could also appear in PI. For example, it is common in Turkish culture for relatives to stop seeing each other after a disagreement/fight. Religious festivals are good opportunities to bring together and

reconcile such relatives. The sentence in (17) is acceptable if it is uttered in such a situation.

(17)　　Bu　bayram da　**küs**　　　barıştır-dı-k,　　　mutlu-yuz.
　　　　this festival　also　opponent　reconcile-PAST-1PL　happy-1PL
　　　　'We did opponent-reconciling this festival, too. We are happy for this.'

This contrast with Hungarian PI also clearly shows that incorporated bare singulars in Turkish can yield number neutral interpretation independent of the aspectual specification.

To conclude, the number neutrality of Turkish PI requires a different explanation than the one for Hindi and Hungarian. This means that a parametric analysis for PI is inevitable.

4 Pseudo-incorporation with Singular Kind Terms

I argue that (i) PI-ed bare singulars in Turkish form sub-event types together with the incorporating verb in line with Dayal (2011, 2015), but as singular kind arguments rather than as nominal modifiers of the verb, and that (ii) the number neutral interpretation associated with PI is delivered through the *belong-to* relation.

In Section 4.1, we will first see that the behavior of Turkish PI-ed bare singulars is similar to the behavior of English weak definites. Based on this analogy, in Section 4.2, I build my analysis for Turkish PI. Then, in Section 4.3, we will examine the differences between PI-ed singular kind terms and canonical arguments. In Section 4.4, I show that subject PI is also possible in Turkish and I explain how it is derived by the analysis proposed here.

4.1 Analogy with English Weak Definites

The phenomenon of PI has been extended to the so-called *weak definites* in English by Carlson and Sussman (2005) and Carlson (2006). Their move is motivated by the fact that weak definites are not associated with uniqueness despite their definite status, but instead can yield a number neutral interpretation. Consider the following examples.

(18)   a.   John will read the newspaper when he gets home.

        b.   Mary went to the store.

        c.   Marry took the train to Brussels.

The sentence in (18a) could be true in a situation where John reads one or more newspapers when he gets home. Similarly, for (18b) to be true, it is not necessary for Mary to go to a unique store. Finally, (18c) could mean that Mary took the train A half of her way to Brussels, and the train B in the other half.

Carlson and Sussman (2005) further point out that the non-unique reference of weak definites is visible with the possibility of sloppy identity in elliptical contexts. This is exemplified in (19) below, which could mean that Fred and Alice went to different stores (pg. 2).

(19)   Fred went to the store, and Alice did, too.

Building on Carlson and Sussman (2005) and Carlson (2006), Bosch and Cieschinger (2010), Aguilar-Guevara and Zwarts (2010), and Schwarz (2014) offer different analyses for the semantics of weak definites. Among them, Aguilar-Guevara and Zwarts analyze weak definites as singular kind terms. They show that weak definites take narrow scope with respect to quantificational elements, as represented in (20), where *the hospital* allows a distributive interpretation (Aguilar-Guevara and Zwarts 2010, pg. 180).

(20)   Every boxer was sent to the hospital.

Crucially, Aguilar-Guevara and Zwarts also show that weak definite interpretations are restricted with respect to the type of modification that they can receive. Namely, only adjectives that establish sub-types of the nouns that they modify are acceptable with weak definites. The relevant examples that they provide are given in (21) below (Aguilar-Guevara and Zwarts 2010, pg. 181).

(21)   a. #Lola is in the new hospital. vs. ✓ Lola is in the medical hospital.

        b. #You should see the doctor who works in the medical center. vs. ✓ You should see the eye doctor.

One other interesting property of weak definites that Aguilar-Guevara and Zwarts point out is the fact that the weak definite interpretation requires stereotypical circumstances to hold. For example, in *Alice went to the hospital*, it does not suffice for Alice to merely go to the hospital, but she also needs to be engaged in a stereotypical activity there, like undergoing a physical examination as a patient or being a doctor there. In other words, the activity of going to the hospital needs to obey name-worthiness.

The behavior of weak definites as laid out above is very similar to PI. Indeed, I argue that Turkish PI should be analyzed in a unified way with weak definites of English.

As stated above, Aguilar-Guevara and Zwarts analyze weak definites as singular kind terms in light of Dayal's (2004b) view of singular kind reference. With this analysis, they explain the presence of a definite article in these expressions although they lack the uniqueness presupposition at the level of ordinary entities. In addition, they link the restriction in modification to the singular kind denotation of weak definites. Namely, since singular kind terms are built on taxonomic properties, they can only receive modification that is taxonomic in meaning. That is why only sub-type forming adjectives are acceptable with the weak definite interpretation. Of course, what counts as taxonomic modification depends on the context. For example, in (21) the adjective *new* can be considered as operating at the level of ordinary objects since *the new hospital* does not denote a type of the hospital kind in that particular context. On the other hand, the adjective *medical* can be considered as operating at the taxonomic domain since medical hospitals are types of hospitals.

Now, let us see how this view might apply to Turkish PI.

Previously, I have treated the restriction in modification with PI to be an effect of the name-worthiness requirement following Dayal (2011, 2015). Although the restrictions in modification are compatible with PI-ed bare singulars being singular kind terms, they do not

necessarily have to follow from this. In fact, the modification facts still hold even when PI happens with atomic properties of ordinary entities as in Hindi and Hungarian.

On the other hand, the singular kind analysis helps us in capturing the fact that ordinary and sub-type forming modifications yield different number interpretations for non-case marked bare singular objects in Turkish. As discussed above, while *religious book-reading* is a good candidate for PI, *old book-reading* is not, when *old* means *worn-out*. Furthermore, the modification of *book* with *old* in the non-case marked direct object position is only possible when contrastively focused, but when that happens the bare singular is only interpreted as strictly singular, differing from *religious book*. I repeat the relevant examples below.

(22)   a.   İçeri girdiğimde   Ali *dini/*   **eski* **kitap** oku-yor-du.
              inside when.I.entered Ali religious old   book read-PROG-PAST
              'When I entered inside, Ali was doing religious/*old book-reading.'

        b.   İçeri girdiğimde   Ali *ESKİ* **kitap** oku-yor-du,   yeni değil.
              inside when.I.entered Ali old   book read-PROG-PAST new NEG
              'When I entered inside, Ali was reading an old book/#old books, not new.'

This disparity between *old book* and *religious book* then derives as follows: The bare singular *book* in *religious book* is a PI-ed singular kind term and *religious* counts as a taxonomic modifier for the book-kind in a reading context by the name-worthiness requirement. Namely, the taxonomic modification of *book* with *religious* denotes a sub-kind of the book kind, i.e., the religious book-kind, for the reading activity. It yields a number neutral interpretation since although singular kind terms are grammatically atomic they still retain a relation with atomic and plural individuals that belong to the kind. We will see the technical details of this in the following section.[2]

On the other hand, the adjective *old* with a meaning like *worn-out* does not establish a type of the book kind in the reading context, therefore it can only operate at the level of ordinary objects. As a result, it cannot modify the singular kind term *book* and be a part of PI.

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[2]A reviewer questions whether *dini kitap* 'religous book' could be a compound. There are some tests to distinguish noun phrases modified by adjectives from compounds. For example, while compounds do not allow the indefinite article *bir* to intervene between the first and second elements, e.g., **yün bir çorap* 'a woolen sock' an adjective+noun combination does. *Dini* patterns with the latter, e.g., *dini bir kitap* 'a religuous book'.

The reason why *old book* is acceptable in the non-case marked direct object position when it is focused contrastively is not obvious. It could not be explained with a local existential closure applying at the level of the verb (cf. Diesing 1992), but it must have a source from the semantics of focus-marking. Otherwise, it would be available regardless of contrastive focus. One explanation would be in line with Rooth (1985), where it is argued that focus-marked elements introduce sets of alternatives and the union of these alternatives brings with it an existential presupposition (cf. Krifka 1992, and von Vintel 1994). No matter how one analyzes this case, since it is not an instance of PI, the modification of *book* with the object-level adjective *old* is not ruled out. In this case, *book* denotes an atomic property of ordinary objects, and therefore, it cannot yield a number neutral interpretation.

Before proceeding with the details below, I will address an issue that seems to cast doubt on the conclusion reached above: object-level modification of a non-case-marked bare singular is possible in generic contexts. Compare *eski kitap* 'old book' in (22a) with the one in (23).

(23) Ali genellikle *eski* **kitap** oku-r,   çünkü yıpran-mış sayfa-lar-ın
      Ali generally old book read-AOR because worn.out page-PL-GEN
      koku-su-nu   çok sev-er.
      scent-3POSS-ACC very like-AOR
      'Ali generally reads old books because he likes the scent of worn-out pages very much.'

Assuming that *eski* 'old' is a predicate of ordinary objects, we predict a contrast based on whether the sentence is episodic or generic. According to Dayal's (2004b) Revised Meaning Preservation, *eski kitap* 'old book' receives a definite singular reading since *iota* is ranked above ∃-type shift. In an episodic context, this requires accusative case-marking on the noun, as represented in (24a), the denotation of which is given in (24b).

(24) a. Ali *eski* **kitab-ı**   oku-du.
          Ali old book-ACC read-PAST
          'Ali read the old (worn-out) book.'

      b. $read \ (Ali, \ \iota x \ [old(x) \wedge book(x)])$

In the generic case, however, the number neutrality can arise because the singular term is in the restrictor of the Generic operator, as shown in (25). Quantification in this case is over situations, each of which has a unique old book in it. The uniqueness effect is therefore diluted. The lack of accusative case-marking on the noun might be a reflection of this effect.[3]

(25) $[\![(23)]\!] = Gen\ s, x\ [s$ is a normal reading situation & $x = \iota y\ [old(y) \wedge book(y)]$ in $s]$
        $[$Ali reads x in $s]$

So, in order to understand the behavior of bare singulars in the non-case-marked direct object position, one needs to eliminate the genericity factor that would blur the contrast created by the taxonomic and object-level modifiers for independent reasons.

I now return to the details of taxonomic modification. It is usually available with adjectives rather than more complex structures like postpositional phrases and relative clauses. However, what kind and structure of modification counts as taxonomic depends on the noun that is modified and the predicate, regulated by the name-worthiness requirement of PI, as mentioned above. For example, while *old book* is a bad candidate for PI for reading events, it is available for PI for selling/buying events. Similarly, modification by colors can be considered as operating at the ordinary object level in a book-reading context, but it can also easily be considered as sub-kind denoting (classificatory) if the noun modified is an artifact like *bardak* 'glass' in a buying or selling context, as in (26).

(26)   *Yeşil (renk-li)* **bardak** al-dı-m.
        green color-with glass   buy-PAST-1SG
        'I bought a green glass/green glasses.'

In addition, it is possible for some participial relative clauses to function as taxonomic modifiers, as exemplified in (27) (Öztürk 2005: pg. 40).

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[3]See also Dayal (2011) for other cases where uniqueness effects are diluted.

(27)   Ali *oku-yacak* **kitap** al-dı.
       Ali read-FUT   book buy-PAST
       'Ali bought a book/books to read (for spare-time reading).'

Here, *okuyacak* 'to read' does not modify at the level of ordinary objects, instead it adds the meaning 'for spare-time reading'. It could be considered as defining a sub-kind of the book kind based on a purposive classification. Since books have different types for different purposes, such kind of a classification would not be odd to consider as sub-kind forming for the book kind. So, books for spare-time reading would be one kind, and books for studying, books for coloring, etc. would be other kinds of books.

I suggest that *okuyacak* 'to read' can modify at the taxonomic domain since it is derived from the PI structure *book-read* and it yields bouletic modality conveying future possibility based on salient desires/purposes, which, in our case, is spare-time reading. Such relative clauses which are realized in the infinitival form in English are analyzed as internally headed in Hackl and Nissenbaum (2011) (see also Carlson 1977, Sauerland 1998, among others). NPs modified by these relative clauses are base-generated inside the relative clause and raise higher for modification, but they are interpreted in their base position, as illustrated in (28). This contrasts with externally headed relative clause structures which require adjunction to a matching external NP.

(28)   *okuyacak kitap* = *iota* [$_{Rel\ Clause}$ PRO to t_i-read [$_{NP}$ book]$_i$]

This makes it possible for the bare singular *kitap* 'book' to be interpreted as part of the PI meaning, *book-reading*, hence as a singular kind, even if it raises out of the PI structure to be modified by the relative clause *okuyacak* 'to read'. Based on this, the informal denotation of *okuyacak kitap* 'book to read' is given in (29). Depending on the context, the result can denote any of the book kinds like novels, comics, etc. each of which goes under the category of books for spare-time reading.[4]

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[4]Since the singular kind term is interpreted internally, the arguments introduced above it do not affect the taxonomic interpretation of the relative clause. E.g., *Ali akşamları çocuklarına okuyacak kitap aldı.* 'Ali bought a book/books to read to his kids in the evenings.'

(29)   The unique (sub-)kind X s.t. there is at least one world w" that is a possible development of some w' that is consistent with some goal held in w' (spare-time reading), and in which PRO does BOOK(X)-reading (i.e., X is a sub-kind of the book kind and that kind is compatible with the goal of spare-time reading).

To wrap up, considering the facts stated above, I argue that PI-ed bare singulars in Turkish are singular kind terms as argued for weak definites in English by Aguilar-Guevara and Zwarts (2010). Below, I show how they participate in PI.

4.2 The analysis of Pseudo-incorporation with Singular Kind Terms

Aguilar-Guevara and Zwarts claim that weak definites being singular definite kinds stand in Carlson's (1977) Realization relation (R) with the implicit theme argument of the verb (cf. Schwarz 2014). R is the realization relation between kinds and their instantiations which is later defined as *pred* in Chierchia (1998b). In other words, the implicit theme argument instantiates the singular kind in their view. Their analysis of *Lola is reading the newspaper*, where the neo-Davidosonian event semantics is adopted is given below (Aguilar-Guevara and Zwarts 2010: pg. 187). N stands for the singular newspaper-kind in their representation. The two place predicate $U(e, K)$ represents the additional stereotypical interpretation restriction. It means that e is a stereotypical usage of a kind K.[5]

(30) $[\![Lola\ is\ reading\ the\ newspaper]\!] = \exists e\ [read(e) \wedge Agent(e) = lola \wedge R(Th(e), N)$
$$\wedge U(e, N)]$$

Sharing the intuition behind this account, below I provide a different analysis for the semantics of PI building on Dayal's (2011, 2015) analysis, though it can be considered as applying to weak definites of English, as well.

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[5]Similarly, Espinal and McNally (2011) treat bare singular objects in Spanish and Catalan as properties of singular kinds that provide information about the implicit thematic argument of the verb.

I claim that PI-ed bare singulars are semantic (thematic) arguments in line with their syntactic argument status. However, they need to be kept apart from canonical, case-marked arguments. For this, I follow Öztürk (2005) in that the verbal structure has two distinct domains: The lexical domain of VP where case-assignment does not occur and the VP external functional domain where canonical arguments are introduced and assigned case marking.[6]

Adopting a line of thinking in neo-Davidsonian terms, I argue that PI occurs through an Inc head that introduces an incorporating function, i.e., Inc. It merges with a theme head, i.e., Th, that introduces the theme function Th, and creates an incorporating theme head, i.e., Th_{INC}, that introduces a special incorporating theme function, i.e., Th_{INC}. The complex Th_{INC} head merges with the verb and creates a complex verbal head, which takes a bare singular as its complement. That is, PI occurs inside the VP domain, as illustrated below. I call the case-assigning heads *little v theme* and *little v agent*, represented as v_{Th} and v_{Ag}.[7]

(31)

```
                        vP
              ┌─────────┴─────────┐
          Subject                 v′
                          ┌───────┴───────┐
                        vP               v_Ag
                  ┌──────┴──────┐
               Object          v′
                         ┌──────┴──────┐
                       VP            v_Th
                  ┌─────┴─────┐
              PI-ed NP        V
                         ┌────┴────┐
                     Th_INC        V
                    ┌───┴───┐
                  Inc     Th
```

---
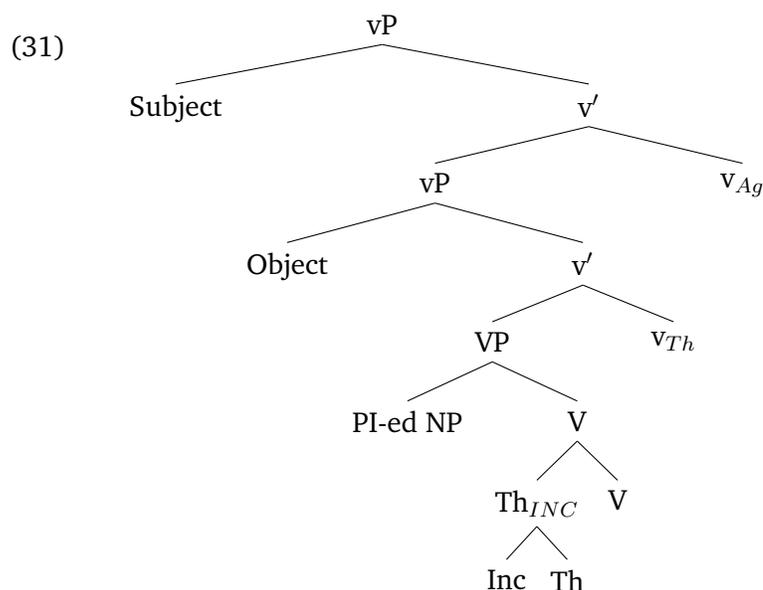
[6]The representation in (31) is slightly different from Öztürk's. She argues that thematic role assignment only occurs in the functional domain and a PI-ed object receives its theme role by undergoing head-movement together with the verb to the theme introducing functional head (represented as v_{Th} here). However, it is not obvious how the interpretation would be derived compositionally in this case.

[7]The VP internal position is not only dedicated to PI, but in fact it hosts non-specific direct object arguments in general. We discuss this in Section 4.3.2.

Taking verbs to denote properties of events e of type v, I define Inc as a function that takes the Th function of type $\langle\langle v, t\rangle, \langle e, \langle v, t\rangle\rangle\rangle$ and returns a new Th_{INC} function of type $\langle\langle v, t\rangle, \langle e^K, \langle v, t\rangle\rangle\rangle$.[8] Th_{INC} takes a verb and a singular kind term to denote a predicate of events whose theme is a member of the kind that the singular kind term refers to. In short, it restricts the domain of individuals that the regular Th function can combine with to singular kind arguments only, and it forms a *belong-to* relation between the theme of the event and the denotation of the kind term. This is illustrated below.

(32)   a. $[\![Th]\!] = \lambda V_{\langle v,t\rangle}\lambda x\lambda e.\ V(e)\ \wedge\ Th(e) = x$

          b. $[\![Inc]\!] = \lambda Q_{\langle\langle v,t\rangle,\langle e,\langle v,t\rangle\rangle\rangle}\lambda V_{\langle v,t\rangle}\lambda x^K\lambda e.\ \exists y\ [\textit{belong-to}(y, x^K) \wedge Q(V)(y)(e)]$

          c. $[\![Th_{INC}]\!] = [\![Inc]\!]([\![Th]\!])$

          d. $[\![Th_{INC}]\!] = \lambda V_{\langle v,t\rangle}\lambda x^K\lambda e.\ \exists y\ [\textit{belong-to}(y, x^K) \wedge V(e)\ \wedge\ Th(e) = y]$

Eventually, the predicate of events denoted by the saturation of the verb and the singular kind argument to Th_{INC} is a sub-type of the event denoted by the verb. The name-worthiness condition of PI is treated as a presupposition about genericity following Dayal (2011, 2015). Namely, the incorporation is defined iff the application of Th_{INC} to the verb and its singular kind argument relates to a generic proposition with a canonically recognizable type of the event denoted by the verb.

Here is how 'Ali did book-reading' in (33) is derived in this account. Syntactically, the singular kind term *book* is introduced within the VP domain and remains non-case marked, and the agent argument *Ali* is introduced in the functional domain and receives nominative case, as represented in (34). The semantic derivation is illustrated in (35), which is existentially closed, as represented in (36). Tense is ignored.

---

[8] In Section 4.4, we will see that Inc can also combine with the agent function Ag resulting in subject PI. Notice also that the PI of indirect objects is not as widely attested as direct objects, though possible. When they PI, they do not receive case marking, e.g., *çocuk bakmak* 'to do baby-sitting'; *çocuk* receives dative case in the non-PI-ed version. However, if the case marking expresses a location then it is still preserved in PI, e.g., *doktor-a çıkmak* 'to go to the doctor' (Jo and Palaz 2019a, 2019b). This can still be considered as an instance of PI since the goal/location bears the signature properties of it: number neutral and narrow scope readings, and the possibility of modification only in the taxonomic domain governed by name-worthiness. How case-marking is retained in this case needs explanation, but we could say that Inc also applies to the goal function.

(33)   Ali **kitap** oku-du.
Ali book read-PAST
'Ali did book-reading.' (one or more books)

(34)

$$\text{vP}$$

```
                    vP
            ┌────────┴────────┐
           DP                 v′
          /  \          ┌─────┴─────┐
        Ali.NOM         VP         v_Ag
                    ┌────┴────┐
                  PI-NP        V
                  /  \     ┌───┴───┐
                book    Th_INC     V
                        ┌──┴──┐   read
                       Inc   Th
```

(35)

$\lambda e.\, \exists y\ [\textit{belong-to}(y, \iota X\ [BOOK(X)]) \wedge read(e)$
$\wedge\ Th(e) = y \wedge Ag(e) = Ali]$

```
            ┌──────────────────────────────────┐
           DP         λxλe. ∃y [belong-to(y, ιX [BOOK(X)]) ∧ read(e)
           Ali                 ∧ Th(e) = y ∧ Ag(e) = x]
                        ┌──────────────────────────┴────────┐
            λe. ∃y [belong-to(y, ιX [BOOK(X)])            v_Ag
                  ∧ read(e) ∧ Th(e) = y]          λVλxλe. V(e)
              ┌──────────┴──────────┐                ∧ Ag(e) = x
           PI-NP        λx^K λe. ∃y [belong-to(y, x^K)
          ιX [BOOK(X)]       ∧ read(e) ∧ Th(e) = y]
                          ┌──────────┴──────────┐
                       Th_INC                    V
```

DP

Ali

$\lambda x\lambda e.\, \exists y\ [\textit{belong-to}(y, \iota X\ [BOOK(X)]) \wedge read(e)$
$\wedge\ Th(e) = y \wedge Ag(e) = x]$

$\lambda e.\, \exists y\ [\textit{belong-to}(y, \iota X\ [BOOK(X)])$
$\wedge\ read(e) \wedge Th(e) = y]$

v_{Ag}

$\lambda V\lambda x\lambda e.\, V(e)$
$\wedge\ Ag(e) = x$

PI-NP

$\iota X\ [BOOK(X)]$

$\lambda x^K \lambda e.\, \exists y\ [\textit{belong-to}(y, x^K)$
$\wedge\ read(e) \wedge Th(e) = y]$

Th$_{INC}$

V

$\lambda V\lambda x^K \lambda e.\, \exists y\ [\textit{belong-to}(y, x^K) \quad \lambda e.read(e)$
$\wedge\ V(e) \wedge Th(e) = y]$

(36) $[\![(33)]\!] = \exists e\, \exists y\ [\textit{belong-to}(y, \iota X\ [BOOK(X)]) \wedge read(e) \wedge Th(e) = y \wedge$
$Ag(e) = Ali]$

Informally, (33) means that Ali is involved in a book-reading event type as an agent. A book-reading event type is a reading event with a theme argument that belongs to the book-kind. Since the members of a kind can be both atomic (a book) and plural individuals (books), PI yields a number neutral interpretation.

Now, let us take a moment to see what this account implies for the nature of singular kind terms. It is clear that singular kind terms stand in a conceptual relation with their members, which I have called the *belong-to* relation, but it is not established in the grammatical component contrasting with the characteristics of plural kind terms. Here, I argue that in fact the grammar resorts to this relation in two cases and one of them is PI, as reflected in the analysis given above. This is what makes the number neutral interpretation available.[9]

Since the number neutrality is not dependent on aspectual specification in Turkish, as opposed to PI with atomic properties of ordinary individuals, the number neutral interpretation of a PI-ed bare singular in Turkish arises in telic as well as atelic aspect. For the same reason, PI with verbs like *compare*, *match*, etc. is also possible.[10]

Furthermore, PI yields a narrow scope interpretation because the theme of the event is introduced through an $\exists$-quantification over the individuals that have a *belong-to* relation to the referent of the singular kind term as part of the Th_{INC} function. With the application of this function to the verb, the $\exists$-quantification becomes a part of the event-type formed. The narrow scope then results from the event quantifier always taking narrow scope with respect to the other quantificational elements. Let us see this through an example:

(37)   a.   Ali **kitap** oku-**ma**-dı.
            Ali book read-NEG-PAST
            'Ali didn't do book-reading.' (no books)

       b. $\neg \exists e \; \exists y \; [belong\text{-}to(y, \iota X \; [BOOK(X)]) \wedge read(e) \wedge Th(e) = y \wedge Ag(e) = Ali]$

---

[9]Mithun (1984) shows that kind-referring nouns are normally incorporated in languages having incorporation. Following Mithun, Krifka et al. (1995) argue that incorporated nouns refer to kinds, and incorporation is a syntactic device to stay in the kind-oriented mode. This idea is very similar to what is proposed here.

[10]Dayal (2015) notes that telicity cannot guarantee a singular reading with English weak definites. This confirms its parallelism with Turkish PI. However, Dayal also notes that English weak definites are not compatible with the verb *compare*, which is an unexpected behavior under the current account. I leave this issue open.

Informally, (37a) means that there is no event such that it is a reading event with an entity that belongs to the book-kind as its theme and that Ali is involved in as an agent. This in return means that there is no book-reading event that Ali is an agent of.

Note that PI is similar to DKP in some sense but they are not the same phenomena. DKP applies to plural kind terms hence it is built on the instantiation operator *pred* which is always available whenever they occur with object-level predicates. Therefore, DKP is a free process that does not have any positional restrictions. It can occur in case-marked argument positions and does not require adjacency. On the other hand, the *belong-to* relation between singular kind terms and their members is not established in the grammar unless they undergo PI, and PI has positional and case-related restrictions. Outside of PI, singular kind terms receive a representative object reading when they occur with object-level predicates, as discussed in the previous chapter. In addition, DKP is not subject to the name-worthiness condition as opposed to PI. We will explore these difference more in Section 4.3.2.

Before concluding, let me briefly compare the analysis offered here with Aguilar-Guevara and Zwarts's analysis. Like in their account, I have argued that the theme of the incorporating verb has a relation to the kind the bare singular refers to. However, I depart from them in the way this relation is represented. Aguilar-Guevara and Zwarts represent it as R, but in the previous chapter, we have established that the relation that singular kind terms hold with respect to the individuals that are members of the kind is different from the one associated with plural kind terms. While the former is a *belong-to* relation, the latter is an *instantiation-of* relation that is captured by the *pred* operator, which is a recasting of Carlson's (1977) R relation. Instead, my account differentiates the relations that singular and plural kind terms hold with individuals realizing them. Second, in my account the *belong-to* relation is introduced by the incorporating thematic function, while Aguilar-Guevara and Zwarts establishes R through an implicit thematic relation.[11]

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[11]Moreover, differing from Aguilar-Guevara and Zwarts's account, the *belong-to* relation is accompanied by an $\exists$-quantification over the members of the kind. They avoid it because weak definites do not introduce discourse referents at the ordinary object level. As pointed out in fn 1, this dissertation does not address the (non-) referentiality issue of Turkish PI and as observed in Seidel (2018b, 2018a) there are cases where PI-ed nouns introduce discourse referents and there are cases where they do not. Completely avoiding $\exists$-quantification leaves the former unexplained, while allowing it seems to be a problem for the latter. See also Krifka and Modarresi (2016) who observe similar inconsistencies in Persian, yet resort to $\exists$-quantification in their analysis.

In sum, in this section I have shown how PI with singular kind terms is possible. In a nutshell, it takes place with an incorporating thematic function that establishes a *belong-to* relation between kinds that bare singulars refer to and individuals that belong to these kinds. The number neutrality is conveyed by this relation.

4.3 Differences between Pseudo-incorporated and Canonical Arguments

In this section I first compare PI-ed singular kind terms and canonical arguments that receive case and have a freer status in the structure. Then, I discuss bare plurals occurring in the non-case marked direct object position and show that they are not PI-ed arguments. We will see that some aspects of their behavior follow from treating them as canonical arguments undergoing DKP as well as from being in competition with singular kind terms.

4.3.1 Case-marked arguments and pseudo-incorporated bare singulars

Canonical arguments are introduced in the functional domain by regular thematic functions and receive case. For example, the bare singular *kitap* 'book' in (38) denotes an atomic property of ordinary individuals undergoing *iota* type-shifting to denote a definite singular individual. It is introduced in the spec of v_{Th} as a theme argument via the canonical Th function. As a result, it receives accusative case. The syntax and semantics of (38) are represented in (39), (40), and (41). Compare this with (33) above.

(38)   Ali **kitab-ı**   oku-du.
         Ali book-ACC read-PAST
         'Ali read the book.'

(39)

$$\text{vP}$$
$$\text{DP} \quad \text{v}'$$
$$\text{Ali.NOM}$$
$$\text{vP} \quad \text{v}_{Ag}$$
$$\text{NP} \quad \text{v}'$$
$$\text{book-ACC}$$
$$\text{VP} \quad \text{v}_{Th}$$
$$\text{V}$$
$$\text{read}$$

(40)

$$\lambda e.\ read(e) \wedge Th(e) = \iota x\ [book(x)] \wedge Ag(e) = Ali$$

DP

Ali

$$\lambda x \lambda e.\ read(e) \wedge$$
$$Th(e) = \iota x\ [book(x)] \wedge Ag(e) = x$$

$$\lambda e.\ read(e)$$
$$\wedge Th(e) = \iota x\ [book(x)]$$

$$\text{v}_{Ag}$$
$$\lambda V \lambda x \lambda e.\ V(e)$$
$$\wedge Ag(e) = x$$

NP

$$\iota x\ [book(x)]$$

$$\lambda x \lambda e.\ read(e) \wedge Th(e) = x$$

VP

$$\lambda e. read(e)$$

$$\text{v}_{Th}$$
$$\lambda V \lambda x \lambda e.\ V(e) \wedge Th(e) = x$$
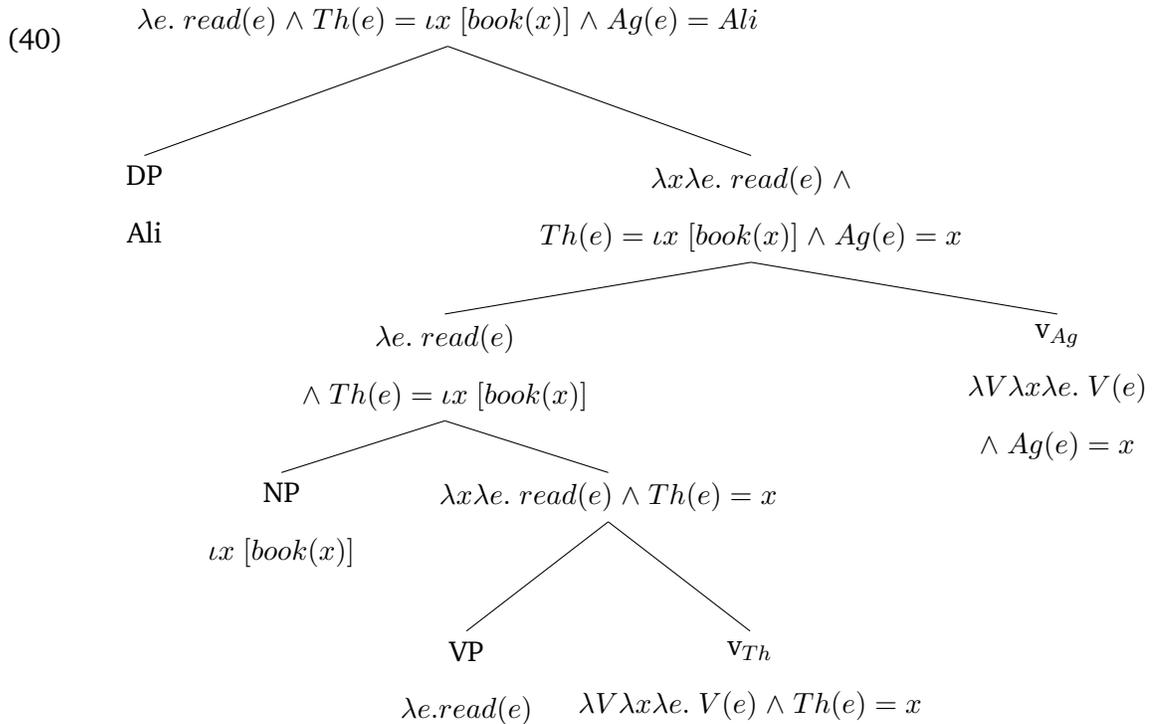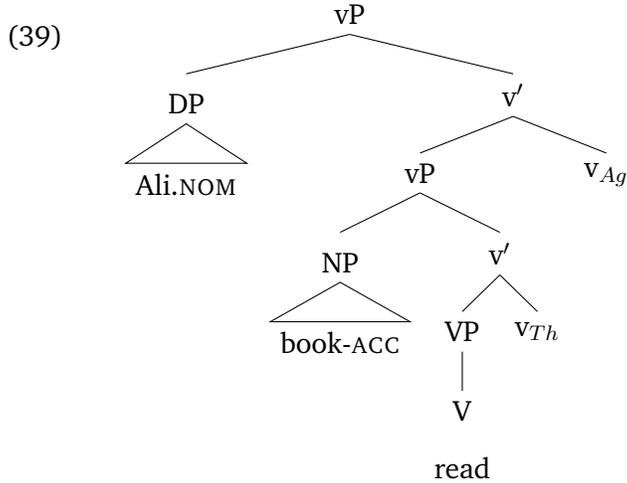
(41) $[\![(38)]\!] = \exists e\ [read(e) \wedge Th(e) = \iota x\ [book(x)] \wedge Ag(e) = Ali]$

So, in (38), the bare singular *kitap* 'book' is simply the theme argument of the reading event that Ali is an agent of. On the other hand, PI-ed singular kind terms are introduced in the VP internal lexical domain and refer to the kind that the thematic argument of the event belongs to, as we have seen above. In other words, the argument saturation with incorporated singular kind terms has rather a mediator status. It indirectly makes it possible

to identify the theme of the event, and the purpose of this indirect identification is to yield canonically recognizable type of the activity expressed by the verb.

Besides the difference in case-marking, PI-ed bare singulars contrast with canonical arguments in requiring to be adjacent to the verb. We will see in the following section that adjacency and the lack of case-marking pertain to non-specificity of direct objects in general rather than just being restricted to PI (Enç 1991 and Heusinger and Kornfilt 2005). Thus, they are a reflection of a more general phenomenon.

Putting this issue aside for now, let us discuss an interesting fact related to case marking on proper names that turns out to be quite revealing for the differences between canonical and PI-ed argument saturation in light of the current analysis. Although proper names generally receive case-marking, there are some contexts where they appear non-case-marked. Famous book and movie/series names constitute a good example for this, as in (42). *Çalıkuşu* is a famous Turkish novel.

(42)   Bugünlerde **Çalıkuşu** oku-yor-um.
         nowadays   Çalıkuşu read-PROG-1SG
         'Nowadays, I do Çalıkuşu-reading.'

I propose that (42) is an instance of PI where the proper name *Çalıkuşu* is a kind term, representing the content of a famous novel as an abstract concept. The familiarity of the novel warrants the construal of an event-type that is the reading of this novel. Namely, *Çalıkuşu* in (42) undergoes PI as a book-kind, conveying a sub-type of reading events, Çalıkuşu-reading. Such kind of a configuration is not possible with nonfamous book names.

This does not mean that all proper names that refer to some famous entity can be PI-ed. Only those that have the potential to be associated with some entities that can realize the kind can be a non-case-marked argument. For example, although commemorating Atatürk, the founder of the Republic of Turkey, can be considered as a name-worthy and typical event for the people of Turkey, the proper name *Atatürk* cannot be PI-ed. Instead, it has to receive the accusative case marker, as shown in (43).

(43)　Her　yıl　on　Kasım-da　　**Atatürk*(-ü)**　an-ıyor-uz.
　　　　every year ten November-LOC Atatürk-ACC　commemorate-PROG-1PL
　　　　'Every year on the 10th of November, we commemorate Atatürk.'

This is because the founder of the Republic of Turkey is a unique individual and something that is necessarily realized by just one individual does not qualify as a kind, unlike the case in famous books that are realized by their content. The contrast between (42) and (43) supports the claim that PI is really a matter involving kind terms.

That being said, I will now discuss the distinctions between PI-ed singular kind terms and singular kind terms that are canonical arguments, receiving case. We have already seen examples of the latter in Section 5.2 of the previous chapter: the case where they occur with a kind-level predicate, as in (44a), or the case where they occur with an object-level predicate receiving a representative object interpretation, as in (44b).

(44)　　a.　Charles Babbage **bilgisayar-ı**　icat et-ti.
　　　　　　Charles Babbage computer-ACC invent-PAST
　　　　　　'Charles Babbage invented the computer.'

　　　　b.　Bu　ülke　　**bilgisayar-a**　çok　geç　kavuş-tu.
　　　　　　this country computer-DAT very late have-PAST
　　　　　　'This country had (obtained) the computer very late.'

In the former, the singular kind term is an argument to a kind-level predicate, therefore its kind-level denotation is at play. In the latter, it is an argument to an object-level predicate, therefore it refers to the computer kind under a representative object reading. In both cases, the argument saturation is canonical in the sense that there is no incorporation going on. Namely, they are introduced by regular thematic arguments, rather than Th_{INC}.

PI differs from (44b) in that it does not receive a representative object interpretation and it differs from (44a) in that a PI-ed singular kind term refers to the kind that the theme of the event is associated with. In (44a) and (44b) the theme of the event is the kind individual itself, but in the case of PI, it is an object-level entity that is in *belong-to* relation to the kind.

We expect a difference between canonical and PI-ed singular kind arguments in their scope taking properties. The narrow scope interpretation of singular kind terms is only possible if they are PI-ed. This prediction is borne out as is evident in the following contrast:

(45) Sonunda bu   hayvanat bahçesi-ne **ayı(-yı)** getir-di-ler.
      finally   this zoo-DAT   bear-ACC bring-PAST-3PL
      with ACC: 'Finally, they brought the bear (kind) to this zoo.'

      without ACC: 'Finally, they did bear-bringing/delivery to this zoo.'

   a. with ACC: $\exists e\ [bring.to.zoo(e) \wedge Th(e) = \iota X\ [BEAR(X)] \wedge Ag(e) = they]$

   b. without ACC: $\exists e\ \exists y\ [\textit{belong-to}(y, \iota X\ [BEAR(X)]) \wedge bring.to.zoo(e) \wedge$
       $$Th(e) = y \wedge Ag(e) = they]$$

(46) Sonunda her   kurum   bu hayvanat bahçesi-ne **ayı-(#yı)** getir-di.
      finally   every foundation this zoo-DAT   bear-ACC bring-PAST
      with ACC: 'Finally, every foundation brought the bear (kind) to this zoo.'

      without ACC: 'Finally, every foundation did bear-bringing/delivery to this zoo.'

   a. with ACC: $\forall x\ [foundation(x) \rightarrow \exists e\ [bring.to.zoo(e) \wedge Th(e) = \iota X\ [BEAR(X)]$
       $$\wedge\ Ag(e) = x]]$$

   b. without ACC: $\forall x\ [foundation(x) \rightarrow \exists e\ \exists y\ [\textit{belong-to}(y, \iota X\ [BEAR(X)]) \wedge$
       $$bring.to.zoo(e) \wedge Th(e) = y \wedge Ag(e) = x]$$

In (45), the singular kind term *ayı* 'the bear' is a canonical direct object to an object-level predicate if it is accusative case-marked, as shown in (45a). The reference is to the kind under a representative object reading, and the event is about the bear kind being brought to this zoo in the sense that the event is momentous for the kind. In short, the protagonist of the event is the bear kind and it bears the property of being brought to this zoo. When the singular kind term is non-case-marked, it participates in PI, denoting a sub-type of bringing events, i.e., bear-bringing/delivery, as shown in (45b). Namely, the theme of the event is an object-level entity or entities in the *belong-to* relation to the bear kind, and what is at issue is what type of a bringing event has taken place. Thus, the protagonist of the bringing event is a member or some members of the bear-kind, the identity of which is not relevant.

The example in (46) represents the interaction of this singular kind term with a universal quantifier in both configurations. Imagine a context where there are a few foundations responsible for bringing animals to zoos. The PI-ed version is interpreted as distinct bear-bringing events for each foundation. This is ensured by the event quantifier taking narrow scope with respect to the universal quantifier. Since the *belong-to* relation is established through an ∃-quantification as part of the event meaning, we get the reading in (46b).

In contrast, the accusative case-marked version of (46), represented in (46a), receives the implausible reading that each foundation brought the bear kind to the zoo. In this case, the bear/bears brought to this zoo stand for the whole bear kind as a unique singleton/group individual, ensuring a total reference to the kind. Since definites are scopally inert, the singular kind term cannot take scope under the quantifier, resulting in infelicity. However, expectedly it can describe a situation as follows: First, a group of bears representing the bear kind is brought to the zoo, but for some reason it is returned. Then, another foundation brings probably a different group, but it is also returned. This continues until each foundation happens to bring the bear kind to the zoo. Crucially, it does not describe a situation where each foundation brings a different part of the same representative group.

This is reminiscent of the case that we have seen in Section 5.2 in the previous chapter: Singular kind terms are incompatible with distributive predicates such as *come from different regions*, the example of which is repeated here in (47).

(47) ***Ayı** bu hayvanat bahçesi-ne farklı   bölge-ler-den gel-di.
       bear this zoo-DAT   different region-PL-ABL come-PAST
       Intended: 'Bears came to this zoo from different regions.'

Again, the ungrammaticality of (47) follows from the representative object reading of singular kind terms. However, it can be made grammatical if the singular kind term is PI-ed instead, as shown in (48). (48) is grammatical because *from different regions* modifies the event of bear-bringing/delivery, not the singular kind. In other words, (48) refers to distinct events of bear-bringing/delivery each of which is done from different regions, and

each bear-bringing event involves different members of the bear kind as its theme.[12]

(48) Kurum   bu hayvanat bahçesi-ne farklı   bölge-ler-den **ayı** getir-di.
      foundation this zoo-DAT   different region-PL-ABL bear bring-PAST
      'The foundation did bear-delivery to this zoo from different regions.'

To wrap up, in this section we have discussed the differences between case-marked canon-ical arguments and PI-ed bare singulars. In the following section, I show that plural kind terms are not PI-ed in Turkish.

4.3.2 Are plural kind terms pseudo-incorporated?

A question arising from the discussion above is whether Turkish plural kind terms can also be PI-ed. To address this, let us consider the behavior of non-case-marked bare plural objects, which, like PI-ed bare singulars, occur adjacent to the verb. They are awkward at best, and ungrammatical if they are intended to convey a sub-event type reading, as in (49). This is reminiscent of what we have seen with the thematic arguments of the verb *invent* in Section 5.3 of Chapter 2. Therefore, it reveals more about the difference between singular and plural kind terms.

(49)   *Ali **kitap-lar** oku-du.
        Ali book-PL   read-PAST
        Intended: 'Ali did book-reading.'

The reason bare plurals are not completely ruled out in this position is because they can function as a canonical argument undergoing DKP, hence being interpreted as a narrow scope existential. However, this is only possible if plurality is emphasized in a contrastive way (e.g., *Ali kitap yazmadı, KİTAPLAR yazdı.* 'It is not the case that Ali did book-writing, Ali did BOOKS-writing.'), or when abundance in number is emphasized.[13]

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[12]Subject PI would also be possible as the following: *Bu hayvanat bahçesine farklı bölgelerden ayı geldi.* 'Bear-coming happened to this zoo from different regions.' Subject PI is discussed in Section 4.4.

[13]Also see Ketrez (2004) for the multiple events reading that is available under certain conditions, e.g., doing

Presumably, a PI-ed singular kind term and a non-case-marked bare plural direct object with a DKP-based narrow scope existential interpretation occupy the same syntactic position where case-marking is not available, i.e., the VP internal lexical domain, as represented below. In this case, there seems to be some kind of a competition between PI and DKP, with the former being privileged and blocking the other.

(50)   PI   DKP

When PI is not possible due to ordinary object-level modification, DKP of bare plurals is good in this position without contrastiveness or emphasis on the plurality, as in (51a).

(51)   a.   Ali *eski* **kitap-lar** oku-du.
              Ali old book-PL   read-PAST
              'Ali read old books.'

        b. $\exists e \exists y \; [read(e) \wedge {}^{\cup\cap}old\text{-}book(y) \wedge Th(e) = y \wedge Ag(e) = Ali]$

Plural kind terms are derived from properties of ordinary objects, therefore the bare plural *kitap-lar* 'books' is first modified with *eski* 'old' and then the *nom* operator applies to the property of old books to denote the individual correlate of this property, i.e., ${}^{\cap}old\text{-}book$. When this kind individual combines with the object level verb *oku* 'read' DKP applies drawing on *pred*, as represented above. DKP is not restricted by the name-worthiness requirement, hence *old books reading* ends up acceptable, in contrast to its PI counterpart.

book-reading multiple times. Such readings are not always available and they add a flavor of exaggeration.

Note that in the case-marked argument positions, whether they undergo DKP or *iota* type-shifting, plurals are perfectly fine without yielding a contrastive reading or an emphasis on plurality. This is because PI is not available in these cases. More precisely, the DKP of bare plurals is odd in the non-case-marked direct object position only, the place where PI occurs.

I argue that PI blocks DKP because the *belong-to* relation applying to singular kind terms has a privileged status over the *instantiation-of* relation applying to plural kind terms via *pred*. The rule in (52) ensures that PI will apply over DKP, allowing DKP to apply only when PI is not available in the same syntactic position or when needed independently for the contrastive and abundance interpretations. In Section 8, we will see the same blocking effect in the predicate position, too.

(52)   When the *belong-to* relation and *pred* are both available in the same syntactic position, apply the *belong-to* relation.

The fact that bare plurals can occur in the non-case-marked direct object position requiring to be adjacent to the verb does not mean that they are PI-ed, since these properties are not only inherent to PI.[14]

A good way of supporting this idea would be to find contrasts between PI of singular kinds and DKP of plural kinds, especially in terms of the hallmarks of PI, number neutrality and obligatory narrow scope. Unfortunately, the narrow scope property does not differentiate between the two phenomena since it is ensured for bare plurals by DKP anyway. Number neutrality might be considered as a distinctive property given the following facts, though. We have already seen in Chapter 2 that bare plurals in Turkish have a number neutral

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[14]This caseless direct object argument position can only be occupied by direct objects that have the capacity to be interpreted as non-specific. Specific and definite direct objects receive accusative case marking in episodic contexts (Enç 1991), but notice that non-specificity can still be achieved with other case markers, i.e., the null nominative case marker and the case markers that indirect objects receive. Bare plural direct objects are interpreted as definites when accusative case-marked and as narrow scope existentials when non-case-marked. If they receive case marking other than accusative, then they get both readings. However, the accusative case does not necessitate specificity/definiteness in generic contexts. See Chapter 5 for more details.

interpretation but they receive a multiplicity reading in positive contexts due to a conversational implicature. So, (51a) has a strict plural reading. On the other hand, a number neutral interpretation is always inferred from a PI-ed bare singular and does not involve a conversational implicature. This disparity shows that DKP and PI are distinct phenomena.[15]

Another contrast that proves helpful on this point is the occurrence of PI with non-derived adverbs in Turkish. Taylan (1984) shows that non-derived adverbs, i.e., adjectives that act like an adverb, always have to occupy an immediately pre-verbal position and cannot precede a case-marked argument, as in (53). However, in the case of PI, they have to precede the PI-ed bare singular, as in (54) (Öztürk 2005, Aydemir 2004, and Kamali 2015).

(53) a. *Ali *yavaş* **kitab-ı** oku-du. $*[Subj$ [Adv [Obj.ACC V]]]
           Ali slow book-ACC read-PAST
           'Ali read the book slowly.'

      b. Ali **kitab-ı** *yavaş* oku-du. $[Subj$ [Obj.ACC [Adv V]]]
           Ali book-ACC slow read-PAST
           'Ali read the book slowly.'

(54) a. Ali *yavaş* **kitap** oku-du. $[Subj$ [Adv [PI.Obj V]]]
           Ali slow book read-PAST
           'Ali did book reading slowly.'

      b. *Ali **kitap** *yavaş* oku-du. $*[Subj$ [PI.Obj [Adv V]]]
           Ali book slow read-PAST
           'Ali did book reading slowly.'

Non-case-marked bare plurals, though, pattern with case-marked arguments in that they cannot be preceded by non-derived adverbs, as shown in (55). Instead, as exemplified in (56a), these modifiers modify the noun rather than the verb when they precede a bare plural (Aydemir 2004). Notice that if the sentence has a bare singular instead, as shown in (56b), *güzel* 'nice' still acts as a non-derived adverb. If the modifier is intended to be used as an adjective, it requires the indefinite form, since it is an ordinary object level modifier. As we have seen above, this kind of modification is incompatible with PI-ed bare singulars.

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[15]Furthermore, non-case-marked bare plural objects introduce discourse referents as opposed to the PI-ed bare singulars for which this is a trickier issue (see Aydemir 2004 and Kamali 2015). See fn 1.

(55) *Ali *yavaş* **(eski) kitap-lar** oku-du.   *[*Subj* [Adv [DKP.Obj V]]]
      Ali slow old   book-PL read-PAST
      'Ali read (old) books slowly.'

(56) a. Ali *güzel* **kitap-lar** oku-du.   [*Subj* [[Adj DKP.obj] V]]
          Ali nice book-PL read-PAST
          'Ali read nice books.'

      b. Ali *güzel* **kitap** oku-du.   [*Subj* [Adv [PI.Obj V]]]
          Ali nice book read-PAST
          'Ali did book-reading nicely .'

Regardless of how we analyze non-derived adverbs, it seems that in the case of PI they modify the event after the sub-event type is formed and before any other canonical arguments are introduced. I believe that it would not be implausible if they were considered to be modifiers further restricting the sub-event type denotation. Based on this approach, the book-reading event type modified by the adverb *yavaş* 'slowly' in (54) is a sub-event type of the book-reading event: slow book-reading (vs. fast book-reading). Since this kind of modification happens as part of the sub-event type it is expected to occur before canonical arguments are introduced. This might explain why non-derived adverbs cannot precede canonical arguments. Given that they cannot precede bare plurals, either, it is reasonable to conclude that non-case-marked bare plurals are not PI-ed.[16]

Besides bare plurals, numeral constructions and indefinites formed with the numeral *bir* 'one' (weak indefinites) can also occur without receiving an overt case-marking, further supporting the idea that non-case-marked direct object position is not only dedicated to PI. In this position, they are interpreted as non-specific, as opposed to specific indefinites with *bazı* 'some', universal quantifiers, pronouns, and definites, which always have to receive case.[17] Kamali (2015) compares non-case-marked indefinite objects with PI and argues that the former cannot be analyzed as an instance of the latter (cf. Öztürk 2005). Her claim is based on the fact that non-case-marked indefinite objects do not convey a number neutral

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[16]Non-derived adverbs cannot follow non-case marked direct object bare plurals undergoing DKP, either. This is because the position of these adverbs is assumed to be the edge of VP and bare plurals undergoing DKP are in the complement position of the verb. If non-derived adverbs were ever compatible with non-case marked bare plurals, they would precede them. However, as stated above, they cannot do so due to semantic reasons.

[17]See Chapter 5 for more details on non-case-marked indefinites.

interpretation and it is still possible to find cases where they yield wide scope readings. Aydemir (2004) also distinguishes them from PI showing that non-derived adverbs cannot precede non-case-marked indefinite objects as opposed to PI-ed bare singulars.[18]

Obviously, being a non-case-marked argument is the reflection of a more general phenomenon and PI of bare singulars is just an instance of it, which definitely is a topic of a separate project.

To sum up, in this section, we have discussed the syntactic and semantic differences that PI-ed bare singulars have in comparison to case-marked and non-case marked canonical arguments. In the following section, I analyze subject PI.

4.4   Subject Pseudo-incorporation

I have argued that bare singulars in argument positions, as opposed to those in the non-case-marked direct object position, are singular definites. I have also argued that bare plurals do not lend themselves to PI. A striking confirmation of these claims comes from examples such as (57) that may at first seem to pose a challenge for the position I have staked out:

(57)   Ali-yi   **arı** sok-tu.
         Ali-ACC bee sting-PAST
         'Ali got bee-stung.' (one or more bees)

Although PI usually targets direct objects, it has been noted in the literature that PI of subjects is possible under certain conditions. Farkas and De Swart (2003), for example, discuss subject PI in Hungarian, and Öztürk (2005, 2009) specifically argues for this for (57).[19] She provides two pieces of evidence, which I elaborate on within the terms of the present

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[18]Aydemir (2004) also argues that while PI supports atelicity, non-case marked indefinite objects are compatible with telicity. Kamali (2015) observes that there are cases where the opposite of this generalization holds depending on the aspectual properties of the verbs. In fact, we have seen in Section 3.2 that PI can occur in telic contexts.

[19]In Turkish, all types of nouns, i.e., animate or inanimate, are perfect candidates for PI with unaccusative verbs. With transitive and unergative verbs human denoting bare singulars have some restrictions. We discuss these in Section 5.3.

analysis. The first one comes from the contrast between (57) and (58) (Öztürk 2005: pg. 42). As noted earlier, an adjacency relation needs to hold between the bare singular and the incorporating verb. When that is not in evidence, the bare singular undergoes the *iota* type-shift to yield a singular definite subject.

(58)   **Arı** Ali-yi   sok-tu.
        bee Ali-ACC sting-PAST
        'The bee stung Ali.'

The second piece of evidence comes from the case-assignment facts. In Öztürk (2005), canonical subjects are claimed to bear the null nominative case marker, being introduced in the functional domain, whereas PI-ed subjects are claimed to be introduced in the VP internal lexical domain, where they do not receive case. The difference in case is visible in embedded nominalized clauses in which canonical subjects receive the genitive case marking, as in (59a), whereas PI-ed subjects remain non-case-marked, as in (59b) (Johanson 1977, Kornfilt 1984, 1997, 2009, Heusinger and Kornfilt 2005).

(59)   a.   **Arı*(-nın)** Ali-yi   sok-tuğ-un-u   bil-iyor-um.
            bee-GEN   Ali-ACC sting-NMLZ-3SGPOSS-ACC know-PROG-1SG
            'I know that the bee stung Ali.' (canonical subject)

        b.   Ali-yi   **arı(-nın)** sok-tuğ-un-u   bil-iyor-um.
            Ali-ACC bee-GEN   sting-NMLZ-3SGPOSS-ACC know-PROG-1SG
            without GEN: 'I know that Ali got bee-stung.' (PI)

            with GEN: 'I know that the bee stung Ali.' (canonical subject)

To Öztürk's arguments about subject PI, I add the following further piece of support. Recall that PI-ed bare singulars do not take object-level modifications that give temporal or accidental properties of individuals but take taxonomic-level modifications depending on the activity type, leading to sub-kind level interpretations. In the case of (57), it is possible to have European-bee stinging, but not broken-wing bee stinging, as shown in (60). (The adjective *siyah* 'black' in (60b) defines the European honey bee.)

(60) a. *Ali-yi *kırık   kanat-lı*   **arı** sok-tu.
          Ali-ACC broken wing-with bee sting-PAST
          Intended: 'Ali got broken-wing bee stung.'

          Good: 'The bee with broken wings (focused) stung Ali.'

      b. Ali-yi *siyah* **arı** sok-tu.
          Ali-ACC black bee sting-PAST
          'Ali got European bee-stung.'

Based on the argumentation sketched above, I argue, following Öztürk, that subjects as in (57) also fall into the same analysis proposed for object PI. As in object PI, PI-ed subjects are introduced VP internally, and therefore, they do not receive case.[20] Adjacency also follows for the same reason. Since case-marked arguments are situated outside VP in the functional domain, they should linearly precede PI-ed bare singulars situated inside VP. This leads to the following linear order: cased arguments > caseless arguments. This is why when an accusative case-marked argument intervenes between a subject and a verb as in (58), the subject cannot be a PI-ed subject (cf. (57)). Namely, there cannot be any caseless arguments preceding a case-marked argument due to their position in the structure.[21]

Semantically, PI-ed subjects are also singular kind terms incorporating to the verb to yield sub-event types. This time the Inc function takes the agent function Ag of type $\langle\langle v, t\rangle, \langle e, \langle v, t\rangle\rangle\rangle$ and turns it into an incorporating agent function, Ag_{INC} of type $\langle\langle v, t\rangle, \langle e^K, \langle v, t\rangle\rangle\rangle$. Similar to Th_{INC}, Ag_{INC} takes a verb and a singular kind term to denote a predicate of events whose agent belongs to the referent of the singular kind term, as shown in (61c).

(61) a. $[\![Ag]\!] = \lambda V_{\langle v,t\rangle}\lambda x\lambda e.\ V(e)\ \wedge\ Ag(e) = x$

      b. $[\![Inc]\!] = \lambda Q_{\langle\langle v,t\rangle,\langle e,\langle v,t\rangle\rangle\rangle}\lambda V_{\langle v,t\rangle}\lambda x^K\lambda e.\ \exists y\ [\textit{belong-to}(y, x^K) \wedge Q(V)(y)(e)]$

      c. $[\![Ag_{INC}]\!] = \lambda V_{\langle v,t\rangle}\lambda x^K\lambda e.\ \exists y\ [\textit{belong-to}(y, x^K)\ \wedge\ V(e)\ \wedge\ Ag(e) = y]$

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[20]Note also that non-derived adverbs precede PI-ed subjects, as in the case of PI-ed objects, e.g., *Ali'yi fena arı soktu.* 'Ali got bee-stung badly.'

[21]It is not clear how the theme argument *Ali* receives accusative case. Since there is no argument bearing nominative case above the theme argument, it cannot be explained as structural case. The assignment of accusative case, then, seems to be regulated by whether there is an agent argument in the derivation rather than whether there is a nominative case assigned agent argument above it. Clearly, this issue is beyond the scope of this dissertation, so I leave it for future research.

Based on this, the syntax and semantics of (57) are illustrated as below, ignoring tense.

(62)

(63)

$$\lambda e.\, \exists y\, [\textit{belong-to}(y, \iota X\, [BEE(X)]) \wedge sting(e)$$
$$\wedge\, Ag(e) = y \wedge Th(e) = Ali]$$

DP

Ali

$$\lambda x \lambda e.\, \exists y\, [\textit{belong-to}(y, \iota X\, [BEE(X)]) \wedge sting(e)$$
$$\wedge\, Ag(e) = y \wedge Th(e) = x]$$

$$\lambda e.\, \exists y\, [\textit{belong-to}(y, \iota X\, [BEE(X)])$$
$$\wedge\, sting(e)\, \wedge\, Ag(e) = y]$$

v_{Th}

$$\lambda V \lambda x \lambda e.\, V(e)$$
$$\wedge\, Th(e) = x$$

PI-NP

$\iota X\, [BEE(X)]$

$$\lambda x^K \lambda e.\, \exists y\, [\textit{belong-to}(y, x^K)$$
$$\wedge\, sting(e)\, \wedge\, Ag(e) = y]$$

Ag_{INC}

$$\lambda V \lambda x^K \lambda e.\, \exists y\, [\textit{belong-to}(y, x^K)$$
$$\wedge\, V(e)\, \wedge\, Ag(e) = y]$$

V

$\lambda e.sting(e)$

(64) $[\![(57)]\!] = \exists e\, \exists y\, [\textit{belong-to}(y, \iota X\, [BEE(X)]) \wedge sting(e) \wedge Ag(e) = y \wedge$
$$Th(e) = Ali]$$
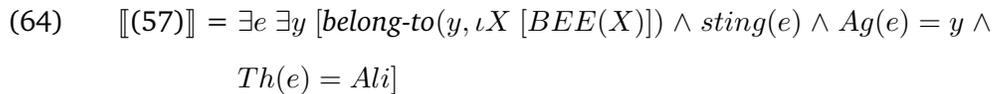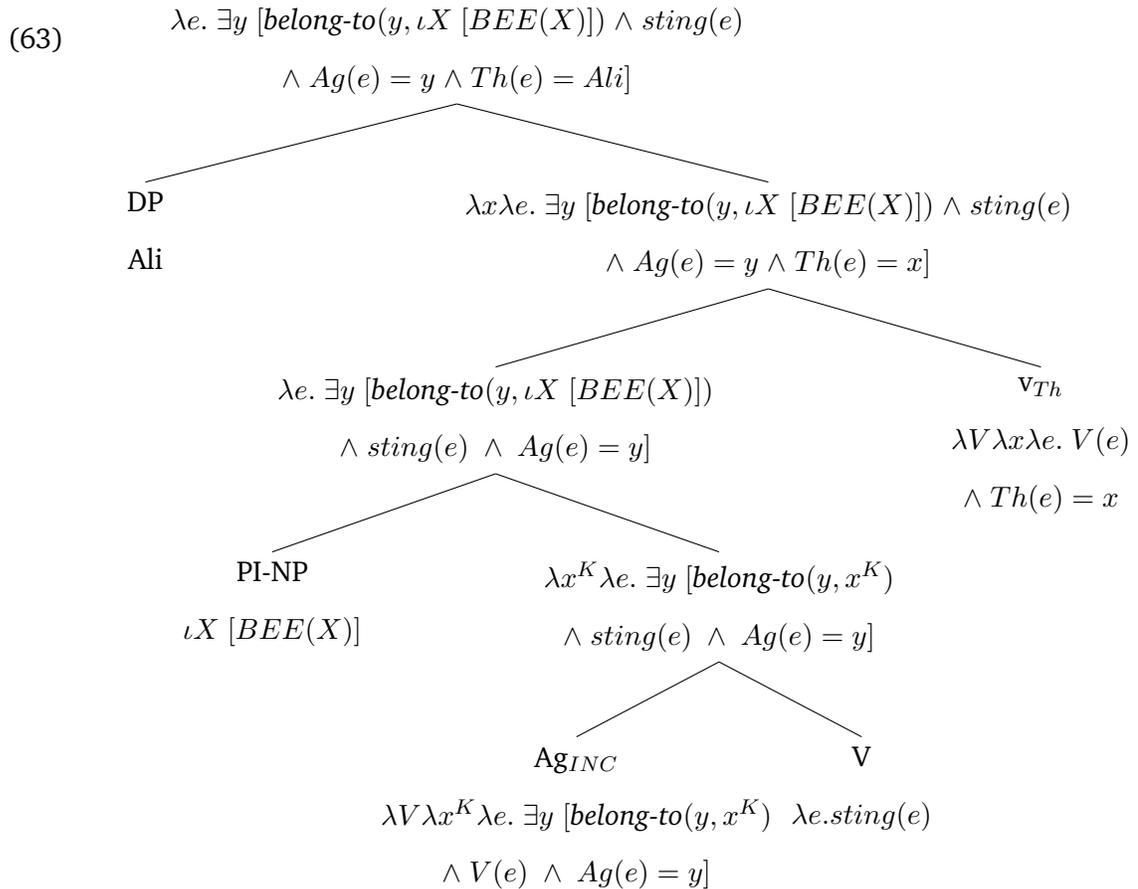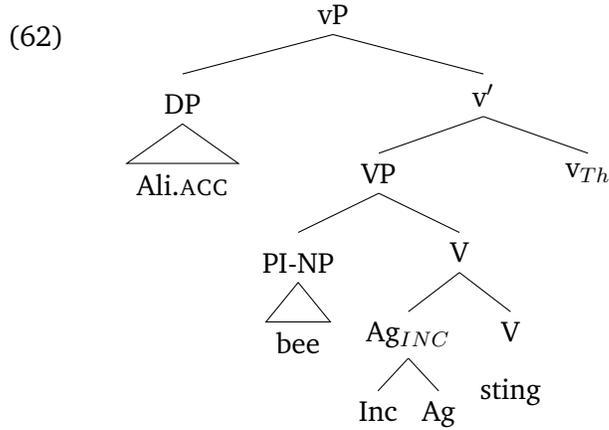
Informally, (57) means that Ali is involved in a bee-stinging event type as a theme. A bee-stinging event type is a stinging event with an agent argument that belongs to the bee-kind. Since the members of a kind can be both atomic (a bee) and plural individuals (bees), PI yields a number neutral interpretation.

On the other hand, (58) is derived as follows:

(65)

```
                    vP
          ┌──────────┴──────────┐
        NP                      v′
       ╱  ╲              ┌───────┴───────┐
   bee.NOM             vP              v_{Ag}
                ┌───────┴───────┐
               DP              v′
              ╱  ╲         ┌────┴────┐
          Ali-ACC         VP      v_{Th}
                           │
                           V
                          sting
```

(66)

$$\lambda e.\ sting(e) \wedge Th(e) = Ali \wedge Ag(e) = \iota x\ [bee(x)]$$

```
        ┌──────────────────────┴──────────────────────┐
       NP                                    λxλe.\ sting(e) \wedge
   ιx [bee(x)]                            Th(e) = Ali \wedge Ag(e) = x
                            ┌────────────────────────┴────────┐
                   λe.\ sting(e)                           v_{Ag}
                   \wedge Th(e) = Ali                   λVλxλe.\ V(e)
                  ┌────────┴────────┐                   \wedge Ag(e) = x
                 DP          λxλe.\ sting(e)
                 Ali          \wedge Th(e) = x
                          ┌────────┴────────┐
                         VP               v_{Th}
                    λe.sting(e)       λVλxλe.\ V(e)
                                       \wedge Th(e) = x
```
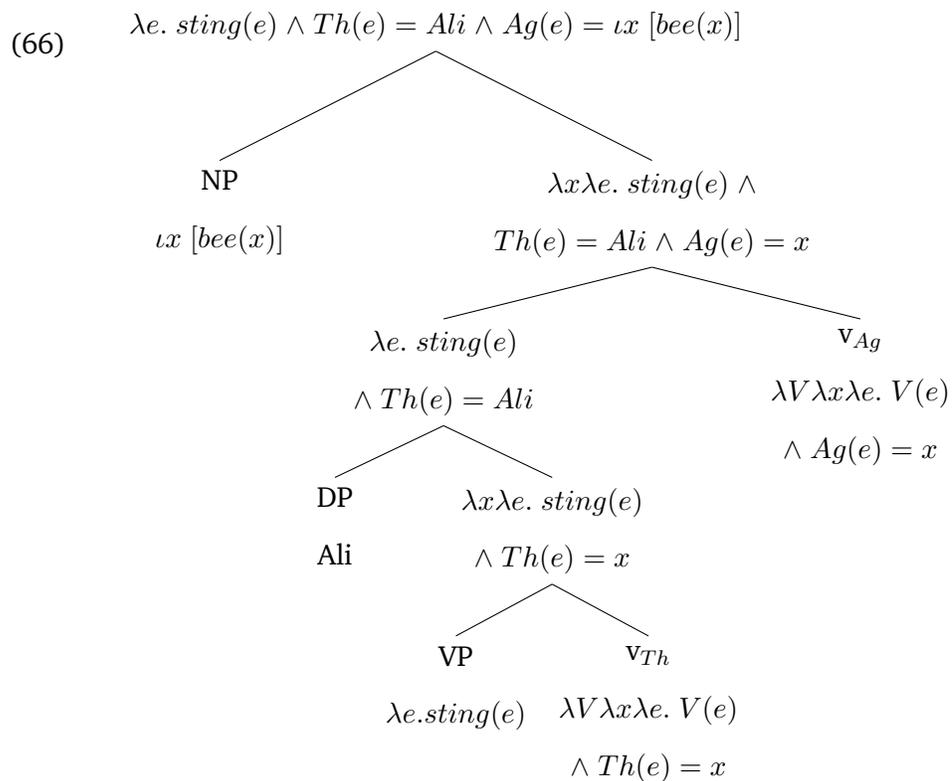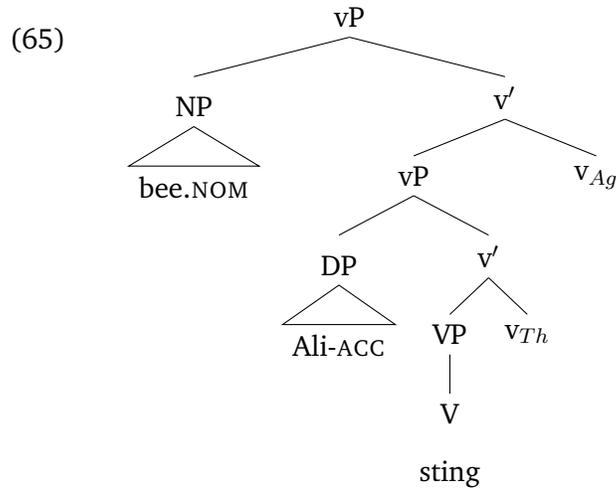
(67) $\llbracket (58) \rrbracket = \exists e \ [sting(e) \wedge Th(e) = Ali \wedge Ag(e) = \iota x \ [bee(x)]]$

In (58), both the subject NP and the object DP are canonical arguments introduced at the functional domain receiving case. Semantically, the bare singular *arı* 'bee' denotes an atomic property of ordinary bee individuals and undergoes *iota* type-shifting to refer to a contextually salient unique bee individual. It becomes an agent argument of the event via the canonical Ag function.

Because the number neutrality of PI-ed subjects stems from their being singular kind terms in Turkish, as is the case with object PI, it is independent of aspectual specification. This is evidenced by (68), which can be true in a situation where a single bee or multiple bees are involved in the stinging event happening in a second.

(68)   Ali-yi   bir saniye-de   **arı** sok-tu.
         Ali-ACC one second-LOC bee sting-PAST
         'Ali got bee-stung in one second.' (one or more bees)

Recall that PI-ed bare singulars obligatorily take scope under other quanitifiers. Accordingly, if (57) is negated, we get the expected $\neg > \exists$ reading: Ali did not get bee-stung (no bees). As in the case of object PI, subject PI yields a narrow scope interpretation since the agent of the event is introduced through $\exists$-quantification over the individuals that have a *belong-to* relation with the kind as part of the event meaning. Since the event quantifier always takes narrow scope with respect to the other quantificational elements, this $\exists$-quantification is also interpreted under these quantificational elements.

Recall further that PI in Turkish does not apply to bare plurals. As predicted, the plural version of (57) with *arı-lar* is unacceptable with the intended PI meaning of bee-stinging. It can only occur as a nominative case-marked canonical argument that receives a narrow scope existential reading via DKP or a definite reading by type-shifting via *iota* in episodic contexts. The fact that they are not PI-ed is evidenced by their obligation to receive the genitive case in nominalized clauses as opposed to PI-ed bare singulars, as shown below.

(69)   Ali-yi   **arı-lar*(-ın)** sok-tuğ-un-u   bil-iyor-um.
           Ali-ACC bee-PL-GEN   sting-NMLZ-3SGPOSS-ACC know-PROG-1SG
           'I know that bees/the bees stung Ali.' (canonical subject)

Notice that DKP of a bare plural subject does not compete with a singular kind term, since the nominative case-marking argument position does not introduce PI. So, bare plural subjects are still good in the immediately preverbal position without the restrictions observed in the case of their object counterparts discussed previously.

To conclude, just as bare singulars occurring in the non-case marked direct object position, the apparent number neutrality of bare singulars occurring as non-case marked subjects is due to their incorporation as singular kind terms.

5 Further Issues

Before concluding the discussion on PI, I will discuss some issues related to the adjacency requirement, the lack of case-marking on PI-ed nouns, and the restricted productivity of PI from a cross-linguistic perspective.

5.1 Adjacency and Pseudo-incorporation

I start by examining the adjacency requirement of PI in more detail. As should be already clear by now, a PI-ed noun needs to immediately precede the verb, as exemplified in (70).

(70)   a.   Ali oda-da   **kitap** oku-du.
              Ali room-LOC book read-PAST
              'Ali did book-reading in the room.'

        b. *Ali **kitap** oda-da   oku-du.
              Ali book room-LOC read-PAST

Moreover, PI disallows case-driven movements such as passivization. Consider the following examples from Öztürk (2005) (pg. 46 & 47) (see also Gračanin-Yüksek and İşssever 2011):

(71)   Oda-da   **kitap** oku-n-du.
       room-LOC book read-PASS-PAST
       'Book-reading was done in the room.'

(72)   a.   Ali **kitab-ı**   oda-da   oku-du.
            Ali book-ACC room-LOC read-PAST
            'Ali read the book in the room.'

       b.   **Kitap** oda-da   oku-n-du.
            book   room-LOC read-PASS-PAST
            'The book was read in the room.'

In (71), the PI-ed bare singular occurs with a verb that has the passive morphology on it. However, the interpretation is what is known as impersonal passivization in Turkish, where it is the event itself that is passivized, rather than a theme argument (see Özkaragöz 1980, Biktimir 1986, Knecht 1986, Göksel 1990, 1993, Kornfilt 1997, among others). This contrasts with the passivization of an accusative case-marked direct object shown in (72b).

On the other hand, the adjacency has a rather liberal status in Turkish PI since PI-ed objects can be separated from the verb in two cases. First, focus associated clitics like the question particle *mI*, *bile* 'even', and the additive particle *dA* can intervene between a PI-ed bare singular and the verb, as exemplified in (73) with *bile* 'even' (Öztürk 2005, pg. 39).

(73)   Ali **kitap** bile oku-du.
       Ali book even read-PAST
       'Ali did even book-reading.'

Second, a PI-ed bare singular can be separated from the verb for discourse-related purposes (contrastive topic or focus), as shown by Sezer (1996), Öztürk (2009), and Gračanin-Yüksek and İşssever (2011). For this, consider the following example, where the PI-ed singular noun is interpreted as a topic (Gračanin-Yüksek and İşssever 2011, pg. 5). PI in Turkish is similar to PI in Hindi in that sense, for which Dayal (2003, 2011) also shows cases where the incorporated noun can scramble for discourse-related purposes.

(74) **Kitap** Ali çok oku-yor.
      book Ali a.lot read-PROG
      'Books, Ali reads a lot.'

Baker (2014) proposes a unified analysis for PI and noun incorporation (NI) (see Baker 1988 and Mithun 1984 for the latter). In NI, the incorporated noun is argued to combine with the verb root yielding a morphologically complex compound verb in Baker (1988, 1996) and Baker et al. (2005). In these works, it is argued that NI is a movement process where the noun head moves from its base position inside the direct object phrase and adjoins to the verb head, along the lines of the copy theory. Baker (2014), drawing on data from Sakha and Tamil, applies this view to PI as well, and argues that the noun head in the PI-ed NP moves to the verb. He argues that the lower copy is deleted, and the one attaching to the verb is pronounced, as illustrated in (75b), which represents the structure of an example from Sakha given in (75a) (Baker 2014, pg. 16).

(75) a. Min saharxaj sibekki ürgee-ti-m.
          I   yellow   flower pick-PAST-1SG
          'I did yellow-flower picking.'

      b. I [$_{VP}$ [$_{NP}$ yellow ~~flower~~] [$_V$ flower-pick]]

Baker derives the adjacency effect of PI via this head movement analysis, where it is claimed that there should be no elements between the two copies of the PI-ed bare noun. The application of the head-movement analysis of NI to PI is based on Dayal's (2011, 2015) analysis, where PI-ed bare singulars are argued to denote a predicate. Basically, under the assumption that PI-ed nouns can only project up to NP and have a predicative interpretation, he takes the head-movement to be a trigger/sign of complex predicate formation. He argues that for NPs to have a predicative denotation they need to move and attach to the verb, otherwise they have an argumental status as in DKP of bare plurals.

Since I have claimed that Turkish PI-ed bare singulars do not have predicative status but are instead syntactic and semantic arguments, the motivation behind the head movement

analysis seems to be untenable, at least for languages where PI occurs with singular kind terms. Of course, one could argue that head-movement is required to mark the special status of the incorporating singular kind terms, which can be treated as a mediator between the event denoted by the verb and its thematic argument. Although this could be a reasonable motivation for the head movement analysis, I will now discuss some independent problems for analyzing Turkish PI within this account that pertain to the issue of adjacency.

To begin with, Baker considers the fact that PI does not have a strict adjacency effect in Hindi as observed by Dayal (2011). Dayal shows that in Hindi (i) the movement of PI-ed bare singulars is possible for pragmatic reasons, as mentioned above, and (ii) the negative particle can come between the verb and the PI-ed noun, yielding the *noun > neg > verb* order. For the latter, Baker suggests that the placement of the negative particle with respect to the verb means that Hindi has V-to-T movement, which moves the verb past the negation and adjoins it to T. Consecutively, the lower copy of the verb - the one preceding the negative particle- is deleted, while the higher copy that is adjacent to T is maintained. Eventually, we get the following order: ~~noun~~ > *noun+~~verb~~* > *neg* > *verb+T*. Here, first the noun undergoes head movement for incorporation and its higher copy is pronounced, and then the verb undergoes V-to-T movement and similarly, its higher copy is pronounced. Baker argues that the V-to-T movement has the effect of breaking the PI-ed noun+V cluster.

Baker explains the movement of PI-ed nouns for pragmatic purposes in Hindi based on the same reasoning. The V-to-T movement allows the adjacency to be broken and once the cluster is broken, the PI-ed noun is free to scramble. Crucially, when the noun scrambles, the copy that lands in the scrambled position, i.e., the higher copy, is pronounced.

Now, let us see how this might apply to the intervention of focus associated clitics in Turkish, shown in (73). The question is how these clitics end up between the noun and the verb in the first place if the noun moves to the verb. Based on Baker's theory, (i) we do not expect any intervening element between the two copies of the noun, and (ii) we expect the higher copy of the noun - the one that is adjacent to the verb- to be pronounced. Namely, we expect the ~~book~~ > *even* > *book+read* order, but we get the *book* > *even* > ~~book~~*+read* order.

There remain some questions even if it can be argued that there is V-to-T movement in Turkish for affixation, which can break the N+V cluster, hence give the noun the freedom to be separated from the verb as in Hindi. One thing to note is that the cluster in Hindi is broken either by the movement of the verb to T over the negative particle, or by the left-ward movement of the PI-ed object after V-to-T movement happens. In both cases, the highest copies of the moved elements are assumed to be pronounced. In (73), though in order to get the correct word order, the lower copy of the noun has to be pronounced, which goes against one of the fundamental features of Baker's theory. Of course, there might be some other syntactic or PF related conditions that might allow the lower copy to be pronounced in this particular situation. I leave this issue as an open question.

Let us now recap how the adjacency issue fits into my account. There are two things that need to be emphasized. First, as we have seen, strict adjacency between a PI-ed bare singular and a verb is not a property that Turkish exhibits. Second, fairly strict word order restrictions concerning PI-ed bare singulars are also shared by non-specific bare plural and non-specific indefinite direct objects. I understand these restrictions to be a result of these arguments being in the VP internal position. A robust syntactic reflex of this is a requirement that they be caseless and not undergo case-driven movement, e.g., passivization.

5.2   Case-marking with Pseudo-incorporation

As stated above, just like the adjacency effect, the lack of case-marking on Turkish PI-ed bare singulars is a reflection of these nouns being introduced in the VP internal domain. I will now elaborate on the issue of case-marking in PI from a cross-linguistic perspective.

Baker (2014) suggests a parametric view for case-marking in PI. He argues that in some languages like Tamil, the phi-features of the original copy in a noun movement chain can be deleted, and as a result of this, the relevant noun loses its case feature as well as its number and gender features. There are also languages where they can be maintained, such as Hungarian (Kiss 2002), where the PI-ed object bears the accusative case-marking, and Hindi, where the verb can agree with the PI-ed object (Dayal 2011, 2015).

I follow Baker (2014) in that a parametric view can explain the differences between languages like Hindi and Hungarian on the one hand and Turkish and Tamil on the other hand. However, it should be noted that the parameter, if it really exists, must be sensitive to the specific properties of case-marking in languages that happen to have PI. In Turkish, for example, we have seen that the absence of accusative case-marking signals non-specificity of direct objects in general. Only those objects that have the potential of yielding a non-specific interpretation occur non-case marked in the direct object position, i.e., bare plurals undergoing DKP, non-specific numeral constructions and indefinites formed with *bir* 'one' (weak indefinites), and PI-ed bare singulars. Similarly, the accusative case marks specificity/definiteness, which means that PI, yielding a non-specific interpretation in a broader sense, cannot be expected to be accompanied by accusative case-marking in Turkish anyway. In Hungarian, on the other hand, it seems that the presence/absence of the accusative case marking does not yield the same kind of interpretational differences as in Turkish.

One other issue regarding case and PI is whether being caseless means being PI-ed in Turkish. I raise this question, since it is a general tendency to treat all non-case marked argument saturation as instances of PI. In Section 4.3.2, I have argued against this idea, and showed why non-case marked bare plurals and weak indefinites should not be analyzed as PI. Similarly, non-PI-ed argument saturation does not imply obligatory case-marking. It depends on the argument and the interpretation it receives. For example, if a bare plural direct object undergoes DKP it occurs non-case marked but if it undergoes *iota* type-shifting to yield definiteness, then it receives accusative case-marking. In short, non-specificity bans case-marking in the direct object position but it does not mean that all non-case marked elements are PI-ed. We also know that bare singulars do not have the ability to yield non-specific readings unless PI-ed due to Dayal's Revised Meaning Preservation (see Section 5.1 of Chapter 2). Therefore, if non-PI-ed, they are obligatorily *iota*-type shifted to yield definiteness and end up case-marked.

To wrap up, case-marking with PI is a parametric issue, further constrained by language-specific properties of case-marking.

5.3 The Restrictive Productivity of Pseudo-incorporation

Finally, I will discuss restrictions on the productivity of PI, which are subject to a wide range of cross-linguistic variation.

As is clear from the discussion presented so far, PI is not a fully productive process. It has to obey the name-worthiness condition, which, following Dayal (2011, 2015), has been treated here as a genericity presupposition on incorporation, resulting in a canonically recognizable event type. We have seen that the acceptability of modification depends on this. To repeat an example, *old book-reading* is not compatible with PI if the adjective *old* defines the physical properties of the books because such properties do not have any effect on what type of a reading event is at issue. However, the physical properties of books might have a determining role for a selling/buying event imagining a context where the event happens in a second-hand store which sells previously used, worn-out books. Therefore, *old book-selling/buying* is available in the form of PI.

Dayal (2011, 2015) notes that since name-worthiness is not directly involved in the semantics of PI, but rather comes as a presupposition, the existence of gaps is also expected. An example that she provides for this is the fact that while the counterpart of *house-buy* is available in languages like Hungarian and Danish, the counterpart of *pencil-buy* is not. This is obviously not because *pencil-buying* is not a prototypical activity that would be unsuitable for PI, otherwise it would not be available in any language. In fact, it is a good candidate for PI in Turkish and Hindi.

Similarly, Turkish PI is like PI of weak definites in English, but they differ on the degree of productivity. Although Turkish PI has a highly productive status among the languages that happen to have PI, the weak definite interpretation in English is quite restricted. For example, while in Turkish both *book-reading* and *newspaper-reading* are available, in English only the latter is. In other words, in (76b) the definite singular *the book* can only refer to a unique book, as opposed to *the newspaper* in (76a).

(76)   a.   Lola read the newspaper. (one or more newspapers)

         b.   Lola read the book. (the unique singular book)

Schwarz (2014), arguing that weak definites and PI is a process of forming event kinds, suggests that *read the book* simply is not counted as a well-established event kind, much like *the green bottle* is not considered to be a well-established kind in the nominal domain.[22] Considering event kinds as being equal to what we refer to as typical/canonically recognizable activities in a sense, the unavailability of *read the book* in English cannot be because it does not count as a typical activity. In fact, in Turkish and Hindi, it is considered to be so, therefore it is available for PI, suggesting that the case of English is simply a gap. However, I believe that this particular case is not an accidental gap, and in fact it could be explained by referring to the difference in the status of kind terms in the two languages.

The use of singular kind terms in Turkish is more common than their use in English. While English singular kind terms are mostly restricted to well-defined or biological kinds, in Turkish singular kind reference applies to almost all sorts of nouns. English does not refer to the book kind by the singular form, but instead the plural form is used for this purpose. However, singular kind reference is available for the newspaper kind, as shown below. (77a) is adopted from Aguilar-Guevara and Zwarts (2010) (pg. 181), and (77b) belongs to me.

(77)   a.   The newspaper brings/Newspapers bring people their daily news.

         b.   #The book is/Books are a good source of information.

As opposed to this, in Turkish, both *kitap* 'book' and *gazete* 'newspaper' have a singular kind denotation independently of PI, as shown below.

(78)   a.   Gazete/   Gazete-ler   günlük haber kaynağı-dır.
              newspaper newspaper-PL daily   news   source-GENERIC
              'The newspaper is/Newspapers are a daily news source.'

---

[22]However, see Dayal (2004b) for a context where *the green bottle* can count as a kind term.

b.   Kitap/ Kitap-lar iyi   bir bilgi   kaynağı-dır.
      book   book-PL good a   knowledge source-GENERIC
      'Books are a good source of information.'

I suggest that differences in PI are correlated with this distinction.

However, the highly restricted status of weak definite interpretations in English cannot be explained purely on the basis of the restricted use of singular kind terms in the language. For example, in Section 4.3.1, we have seen that *bear-bringing/delivery* counts as a typical activity in a zoo context in Turkish, hence it is suitable for PI (see (45)). However, *bring the bear* does not have a weak definite interpretation despite the fact that *the bear* is a well-established biological kind and that the singular kind reference is available for it in English. It seems to be the case that the weak definite interpretation is more restricted than the use of singular kind terms in English, and there is no good explanation for this at this point.

One other issue on the limited status of PI that I would like to raise is the fact that PI is not available for arguments other than themes in most languages that allow PI. On the other hand, we have seen that in Turkish subject PI is also possible. Then, what makes Turkish special among these languages?

Jo and Palaz (2019b) offer a syntactic explanation for this. They assume that all arguments are first introduced at the VP level, and then move out of it to receive case if they are to be interpreted as specific/definite in Turkish. If the direct object which is the complement of V moves higher than its original VP internal position to receive case-marking, then it makes it possible for the agent to be incorporated. In other words, the direct object as being closer to the verb always has the privilege to be incorporated, but once it moves out, the stage is left to the other arguments waiting in line, such as the agent argument.[23]

Additionally, they suggest that in languages that lack a movement mechanism for the purposes of case-marking, as in Japanese, agents cannot be PI-ed since they are blocked by the

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[23]They argue that goal incorporation is also possible, which I mention in fn 8. They also discuss the possibility of PI with multiple arguments, though I remain skeptical about this. See Jo and Palaz (2019b) for further details.

direct object remaining in its VP-internal position. As plausible as it seems at first glance, I would like to point out that agent incorporation in Turkish still is not as unrestricted as theme incorporation, and in their view we expect it to be so, as long as name-worthiness is respected. However, subject PI with transitive and unergative verbs has some limitations for human denoting bare singulars. Consider the following examples:

(79)   a.   Bu resm-i   **çocuk** çiz-miş.
                 this picture-ACC child   draw-EVID
                 'Apparently, this picture is child-drawn.'

        b.   Bu resm-i   **çocuk** çiz-di.
                 this picture-ACC child   draw-PAST
                 'The child drew this picture.'

What seems to be case here is that in (79a), the evidentiality makes the identity of the child unknown/unimportant, whereas the indicative past in (79b) makes it salient because the past tense in Turkish implicates the speaker's direct witnessing of the event. Apparently, subject PI is sensitive to this saliency with human agents, requiring it to be degraded in a sense, so that it can be a part of PI. This is not the case for other animate agents like *bee* and human/animate/inanimate themes with unaccusative verbs. What seems to be important is the status of the PI-ed human agent in terms of some kind of saliency, the exact nature of which remains open at this point. This means that the restrictedness in PI cannot be fully governed by a syntactic constraint, considering the semantic contrast above.

Similarly, in Spanish, PI is only available with what Espinal and McNally (2011) call *have predicates*. Why should that be the case? My point is that just as we do not know why *bring the bear* does not yield a weak definite reading in English unlike *bear-bring* in Turkish, we do not know why languages have different degrees of restrictedness in incorporation.

What is clear is that for PI name-worthiness is a necessary condition, but it might not be a sufficient condition based on language-specific/idiosyncratic restrictions and gaps. As has also been pointed out in Dayal (2015) '[i]t seems that we simply have to accept the possibility of gaps in the paradigm when discussing pseudo-incorporation.' (pg. 55).

6 Interim Summary

Let me summarize the discussion on PI.

We have seen that Turkish bare singulars occurring in the non-case marked direct object position are instances of PI, manifesting the most notable characteristics of the phenomenon. On the syntactic side, they lack case-marking and need to be adjacent to the verb, though in a rather liberal way in contrast to PI-ed nouns of many other languages. Despite their non-canonical properties, they are still syntactic arguments of verbs, saturating their thematic slot. On the semantic side, they obey the name-worthiness requirement of PI, which also has an effect on what kind of modification PI-ed bare singulars can receive. Furthermore, they yield number neutral and narrow scope interpretations.

The main contribution has been to show that the phenomenon of PI needs a parametric account. We have discussed Dayal's (2011, 2015) analysis of PI which is based on data from Hindi and Hungarian. Basically, she claims that PI-ed bare singulars denote atomic properties of ordinary individuals and modify the verb. The name-worthiness is a presupposition on the incorporation verb, and the number neutrality is provided by aspectual specification being available in atelic contexts only. The narrow scope interpretation stems from the PI-ed bare singular being a modifier to the verb, which is the actual narrow scope taker.

However, we have seen that the number neutrality of Turkish PI-ed bare singulars must have a separate source than aspectual specification. This has led us to a comparison with weak definites of English, which are so called because they are not associated with uniqueness but instead yield a number neutral interpretation despite their definite status. Carlson and Sussman (2005) and Carlson (2006) have already associated these unusual definites with PI, but among the various accounts that have offered explanations for them, we have focused on Aguilar-Guevara and Zwarts's (2010) analysis, where they have been claimed to be singular kind terms. Besides the number neutral interpretation that they receive, we have seen that weak definites are also very similar to PI-ed bare singulars in obeying the name-worthiness requirement of PI and in receiving a narrow scope interpretation.

Given the similarities of weak definites with PI and building on Dayal's (2011, 2015) and Aguilar-Guevara and Zwarts's (2010) analyses, I have argued that PI alternatively occurs with singular kind terms, and this is what we have in Turkish.

To recap the particulars of this new account, following Öztürk (2005), I have proposed that PI happens in the VP internal position in Turkish, which is argued by Öztürk to be one of the distinct domains that the verbal structure has. Contrasting with the functional domain situated above VP, it is a caseless domain and establishes adjacency to the verb.

PI occurs through an Inc head that denotes an incorporating function, Inc. It takes a canonical thematic function which could be Th or Ag, restricts the domain of individuals that they combine with to singular kind terms only, and introduces the *belong-to* relation between the theme/agent of the event and the referent of the kind term. Then, these new incorporating thematic functions Th_{INC} or Ag_{INC} apply to the verb. The predicate of events denoted by the saturation of the verb and the singular kind argument to Th_{INC} and Ag_{INC} functions is a sub-type of the event denoted by the verb, presupposing name-worthiness. While we have only seen examples for direct object PI via Th_{INC} and subject PI via Ag_{INC}, subject PI could also be derived by Th_{INC} for unaccusative verbs.

One crucial aspect of my account is that PI is one of the two places where the grammatical component resorts to the *belong-to* relation that conceptually holds between kinds that singular kind terms refer to and individuals that we intuitively associate with them. Number neutral interpretation arises because the set of individuals that belong to a kind includes both atomic and plural individuals.

We have also examined the differences between PI-ed bare singulars and canonical (non-) case-marked arguments. Crucially, we have seen that a canonical singular kind argument ensures that the thematic argument of the event is the kind itself, whereas a PI-ed singular kind argument ensures that it is some members of the kind. We have also seen that plural kind terms cannot be PI-ed in Turkish but instead undergo DKP, and that PI has a blocking effect on DKP. Finally, we have discussed more general issues like adjacency, the lack of case-marking, and the limited productivity of PI from a cross-linguistic perspective.

In the remaining part of this chapter, I will examine the two other cases where bare singulars receive a number neutral interpretation, i.e., the existential copular construction and the predicate position.

7   The Existential Copular Construction and Pseudo-Incorporation

I now turn to the existential copular construction, which is another instance where bare singulars are interpreted number neutrally. The relevant example is repeated below.

(80)   Oda-da   **fare**   var.
        room-LOC mouse exist
        'There is a mouse/are mice in the room.'

Such sentences instantiate the existential copular construction where a locative phrase is followed by a pivot, which in turn is followed by the existential copula *var*. In our case the pivot is a bare singular, but bare plurals, indefinites, numeral constructions, nouns with universal quantifiers, definites, demonstratives, pronouns, and proper names can also be pivots, as shown in (81). This means that Turkish existential clauses are unrestricted in that respect and do not show a definiteness effect (cf. Kelepir 2001).[24]

(81)   a.   İçeride **fareler/bir fare/iki fare** var.

          'There are mice/is a mouse/are two mice inside.

    b.   İçeride **her fare/fare/fareler/o fare/o/Mickey Mouse** var.

          Lit.: 'There is every mouse/the mouse/the mice/that mouse/he/Mickey Mouse

          inside.'

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[24]Arguing against the lack of the definiteness effect, a reviewer points out that with the "unexpected" pivots, the construction is not genuinely existential, but receives a possessive meaning. However, the possessive reading arises when the locative phrase is animate like a human, and it applies to all pivots, not just to the unexpected ones. E.g., *Bende bu kitap/kitap var.* 'I have this book/a book/books.' This is expected since the interpretation of the copula should be understood as being present at a location, as argued below. This also includes possessive readings: being present at one's possession.

There is an adjacency relation between the pivot and the existential copula evidenced by the fact that the sentence becomes ungrammatical if the pivot is left-dislocated (Taylan 1984). However, as is the case with PI, the separation of the pivot from the existential copula can be successful for discourse-related reasons such as contrastive topicalization.

The semantics of existential clauses has been well studied cross-linguistically, and various theories have been put forward regarding their interpretation (Milsark 1974, Barwise and Cooper 1981, Keenan 1987, Landman 2004, Chen 2008, Francez 2007, among others). Among them, Milsark (1974) proposes that the existential predicate contributes an existential quantifier and the pivot serves as its restrictor, denoting a property. Under this analysis, we would expect bare singulars in the existential copular construction to denote properties, and the construction to yield the definiteness effect. As stated above, the definiteness effect does not hold for Turkish and the pivot seems to be unrestricted. It would also be misleading to treat bare singulars as properties in this construction for the following reasons.

Bare singulars cannot be modified at the ordinary object level when they convey a number neutral reading in this construction, similar to PI.[25] This type of modification is only possible if they are interpreted as singular definites, as represented in (82a). However, taxonomic modification does not obligate a definite and/or singular interpretation, as in (82b).

(82) a. Kutu-da *eski/ büyük/ kırmızı* **kitap** var.
          box-LOC old   big   red   book exist
          'This box has the old/big/red book.'

          Not: 'There is an old/big/red book/are old/big/red books in this box.'

      b. Kutu-da *dini/   tarihi/   bilimsel* **kitap** var.
          box-LOC religious historical scientific book exist
          'This box has the religious/historical/scientific book.'

          'There is/are a religious/historical/scientific book/books in this box.'

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[25]I assume that *old* is not interpreted with a taxonomic meaning, i.e., ancient/historical. The facts regarding contrastive focus and generic contexts discussed in Section 4.1 hold here, as well. Note, though, in a context where *old* is considered as a classificatory property, for example, when books are boxed based on whether they are old or new, then *old* can gain a taxonomic function yielding a number neutral reading. This also holds for the adjectives *big* and *red*. My point is that the taxonomic readings of these adjectives require significant contextual support, but with modifiers in (82b), the sentences yield a number neutral reading even in out of the blue contexts.

Based on these facts, I conclude that bare singulars in the existential copular construction occur as singular kind terms or singular definites at the ordinary object level, undergoing *iota* type-shifting. Namely, they cannot serve as the property denoting restrictor to the ∃-quantifier presumably introduced by the copula and yield a standard indefinite reading.

I claim that in the existential clauses of Turkish, the existential copula denotes a property of existing/being present and the pivot is a subject bearing the theme role on a par with unaccusative constructions. This explains the unrestricted nature of the pivot and the lack of the definiteness effect as opposed to languages like English. The locative phrase is an argument that specifies the contextually salient location or time of existence/presence.

I also claim that when a singular kind term is the pivot, differently from the other pivots, subject PI occurs. In other words, singular kind terms are introduced by the incorporating Th_{INC} function to yield a sub-type of the existence event/state. The PI-ed singular kind term refers to the kind that the theme argument of this event/state belongs to. This in turn ensures number neutrality as in canonical cases of PI. In light of this, the syntax and the logical representation of (80) is given below.[26] I call the functional head introducing the locative argument as *little v-locative* and represent it as v_{Loc} for consistency.[27]
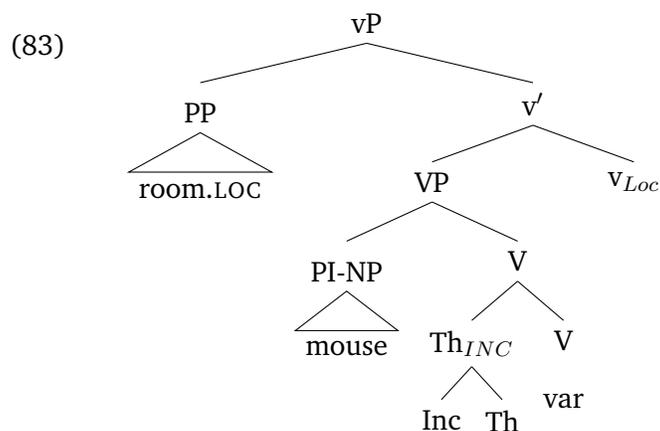
(83)

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(84) $[\![(80)]\!] = \exists e\ \exists y\ [belong\text{-}to(y, \iota X\ [MOUSE(X)]) \wedge exist(e) \wedge Th(e) = y$

   $\wedge\ Loc(e) = \iota x\ [room(x)]]$

Similar to the case discussed in Section 4.4, all the pivots except for the pivot occurring as a singular kind term receive the null nominative case marker, and this difference is made visible by the genitive case marking in nominalized embedded clauses, as shown below.[28] The pivot occurring as a canonical subject is as a proper name here, but the fact holds for other types of pivots, as well.[29]

(85)   a.   Bu oda-da   **Ali*(-nin)** ol-duğ-un-u   bil-iyor-um.
             this room-LOC Ali-GEN   be-NMLZ-3SGPOSS-ACC know-PROG-1SG
             Lit.: 'I know that there is Ali in this room.' (canonical pivot)

       b.   Bu oda-da   **fare(-nin)** ol-duğ-un-u   bil-iyor-um.
             this room-LOC mouse-GEN be-NMLZ-3SGPOSS-ACC know-PROG-1SG
             without GEN: 'I know that there is a mouse/are mice in this room.'

             (singular kind)

             with GEN: 'I know that this room has the mouse.' (singular definite)

It is worth noting that the existential copular construction requires an adjacency relation between all types of pivots and the copula, not just the PI-ed pivot and the copula, for some reason that is not clear to me at this point. This is not the case with regular unaccusative constructions. We could assume that just like non-case-marked direct objects in general, i.e., PI-ed bare singulars, non-specific/weak indefinites, and bare plurals undergoing DKP, all pivots are introduced VP internally, instead of being introduced in the higher case assigning

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[28] Existential copula *var* is realized as the copula *ol-* in embedded structures (Göksel 2003 and Kelepir 2003).

[29] Another pivot that appears without genitive case marking is weak indefinites that receive a non-specific interpretation, e.g., *Burada bir fare olduğunu biliyorum.* 'I know that there is a mouse here (non-specific).' As discussed in Section 4.3.2, weak indefinites are not PI-ed. Here, *bir fare* 'a mouse' appears caseless because when weak indefinites are an internal theme argument for unaccusative verbs they do not receive case, and as I argue above, the existential copular construction has the unaccusative structure. Notice that if weak indefinites are external arguments to transitive or unergative verbs they have to bear the genitive case marking in embedded structures, differently from PI-ed arguments. This shows that being non-case marked is not only about being a non-specific direct object, but in fact it is about being a non-specific theme argument. Bare plurals undergoing DKP cast a problem for this generalization, though. While they appear caseless as a direct object theme argument, they still have to receive case when they occur as an internal theme subject unlike weak indefinites. I leave this issue for further considerations.

functional domain. This would explain the adjacency because the elements introduced inside VP are more restricted in terms of the degree of syntactic freedom (cf. Kelepir 2001).

However, this would leave the facts of the case shown above unexplained because VP internal arguments, both objects and subjects, as shown in the analysis of PI, do not receive case. Here, it is syntactically evident that all pivots except for singular kind terms receive the null nominative case. However, of relevance for our purposes is the distinction between a bare singular pivot occurring as a singular kind term and all other pivots in terms of case-assignment, which aligns with the facts of subject PI.[30]

With this analysis at hand, we expect bare singulars in the existential copular construction to be interpreted under the scope of other quantificational elements due to incorporation as opposed to the other pivots.[31] For example, in (86a), the event quantification takes narrow scope with respect to the universal quantification, which also results in a seemingly narrow scope interpretation for the singular kind term.

(86)   a.   Ev-in   her   yer-in-de   **fare**   var.
              house-GEN every place-3SGPOSS-LOC mouse exist
              'Everywhere in the house there is a mouse/are mice.'

        b. $\forall z\ [place.of.house(z) \rightarrow \exists e\ \exists y\ [belong\text{-}to(y, \iota X\ [MOUSE(X)]) \land exist(e)$
              $\land\ Th(e) = y \land Loc(e) = z]$

If the singular kind term were not PI-ed, we would not expect a narrow scope interpretation. As a canonical kind-denoting argument, the bare singular would yield the implausible reading 'The mouse (as representative of the mouse kind) is such that it exists everywhere in the house.'[32]

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[30]There is one more construction that makes use of the existential copula *var*. It is the possessive construction as in *Ben-im kitab-ım var*. 'I have a book/books.' This construction differs from the one that has been analyzed here in that the possessor bears the genitive case (-*im* above), rather than the locative marker, and the possessee bears the possessive person agreement marker (-*ım* above). The facts regarding modification and case-marking of the pivot explored above also hold for this construction, therefore it could be considered under the same analysis. See Kelepir (2001) for the different types of the existential copular construction, and Öztürk and Taylan (2016) for possessive structures in Turkish.

[31]All the pivots except for bare plurals having existential interpretations are free in their scope abilities. However, bare plurals take narrow scope due to DKP.

[32]Note that 'The mouse (as a kind) exists everywhere' in its global interpretation is good both in English and

To wrap up, bare singulars yielding a number neutral reading in the existential copular construction are singular kind terms undergoing subject PI. The number neutrality is due to the association of singular kind terms with their members through the *belong-to* relation which is an essential part of PI semantics.

8 Singular Kind Reference in the Predicate Position

Finally, I will discuss the number neutrality of bare singulars in the predicate position. Analogous to the analysis of PI, I claim that bare singulars in the predicate position can have singular kind reference and that the apparent neutrality follows from that.

Let us recall the facts regarding bare singulars occurring in the predicate position. Given our claim that bare singulars in Turkish denote atomic properties, we expect them to be predicated of singular subject terms only. However, they can be predicated of plural subjects, too. The relevant example is repeated below as (87).

(87)   Ali ve   Merve **çocuk**.
        Ali and Merve child
        'Ali and Merve are children.'

In Section 4.2 of Chapter 2, we have seen that this use of bare singulars is restricted in terms of what kind of modification they may receive. We have established above that the denotation of bare singulars can be ascertained on the basis of taxonomic level vs. object level modification. This diagnostic also applies to the case under discussion. When bare singulars in the predicate position are modified, they are only compatible with singular subjects, losing their ability to be predicated of plural subjects, as repeated in (88a). On the other hand, if the adjectival modifier is understood as establishing a sub-kind of the noun that it modifies then the predication is compatible with plural subjects as well as singular ones, as repeated in (88b).[33]

Turkish because this is a kind-level predication where the singular kind term refers to the totality of the mouse kind directly, not as a representative object, and this totality is widespread everywhere.

[33]The possibility of *pratisyen doktor* being a compound is eliminated for the indefinite article can intervene

(88) a. Ali (*ve Mehmet) *yakışıklı* **doktor**.
        Ali and Mehmet   handsome doctor
        'Ali is a handsome doctor. Not: Ali and Mehmet are handsome doctors.'

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

The former case can be explained by the claim that bare singulars denote atomic properties of ordinary individuals, and they can be modified at the ordinary object level. Additionally, since they are atomic properties, they can only be predicated of singular subjects.[34] In parallel with PI, the latter can be explained if bare singulars can also appear as singular kind terms in the predicate position, being only compatible with taxonomic modifiers.[35]

The next question is how the predication occurs when bare singulars in the predicate position are singular kind terms, but not property denoting elements. Since shifting to a property type is not possible for singular kind terms, the predication cannot be achieved in canonical terms. Instead, I argue that just as in PI, the predicate position makes it possible for the conceptual *belong-to* relation that holds between the kind a singular kind term refers to and individuals that are members of this kind to be established in the grammatical component. This is achieved by the copula that plays the role of a null operator that takes a singular kind term and a subject term and establishes the *belong-to* relation between the referents of the two.[36] I will call this phenomenon *kind specification* where a kind that the referent of the subject term belongs to is specified. The denotation that the copula has in this construction is given in (89a), and the logical form of the sentence *Ali çocuk* 'Ali is a child' is shown in (89b).

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between the two words, e.g., *Pratisyen bir doktora ihtiyacımız var.* 'We need a practitioner doctor'. See ft 2.

[34]Bare singulars in the predicate position resist modification by complex structures like relative clauses and postpositional phrases, either being interpreted as definite or requiring the indefinite form. This dissertation does not offer an explanation for this restriction. The main purpose is to show that modification of bare singulars when available yields interesting predictions regarding the number interpretation.

[35]Bare singulars in the predicate position can also be found in Romance and Germanic languages like Dutch, French, Spanish, and German, although their usage is more restricted compared to the ones in Turkish. See de Swart et al. (2007) for an account of them which is in similar lines with the analysis given here.

[36]It has been claimed that there is a null copula in the predicate position, and it is the present tense realization of the copula *-i*, which is overtly realized with other tenses (Kornfilt 1996, Kelepir 2003).

(89)   a. $[\![\text{COP}]\!] = \lambda x^K \lambda y.\ belong\text{-}to(y, x^K)$

      b. $[\![Ali\ child]\!] = belong\text{-}to(Ali,\ \iota X\ [CHILD(X)])$

Kind specification can also be achieved if the subject is a plural term considering that sum individuals are also members of kinds. This explains the compatibility of bare singulars with plural subjects in the predicate position. The logical form of (87) is given below.

(90) $[\![Ali\ and\ Merve\ child]\!] = belong\text{-}to(Ali \oplus Merve,\ \iota X\ [CHILD(X)])$

One could argue that the ability of a bare singular to occur with a plural subject is due to a null Distributive operator that takes an atomic property denoted by a bare singular and distributes it over the atomic parts of a plural subject. However, a solution of this kind cannot be adopted since in that case, bare singulars modified at the ordinary object level would also be predicated of plural subjects. This is not the case, as shown in (88a).

Before moving on to the next section, I will show that kind specification is another place where the difference between singular and plural kind terms becomes visible. We would expect plural kind terms to appear in the predicate position in two ways. One is to occur as properties, the other as definites, undergoing further type-shifting via *iota*. However, the first option does not seem to apply as evidenced by (91) which means 'Ali and Mehmet are the doctors.', not 'Ali and Mehmet are doctors.', receiving an equative interpretation.[37]

(91)   Ali ve   Mehmet **doktor-lar**.
      Ali and Mehmet doctor-PL
      'Ali and Mehmet are the doctors.'

This does not mean that bare plurals can only be definites in the predicate position since

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[37]Here, I assume that the stress falls on the plural marker. It is also possible that the syllable before *-lAr* is stressed instead, in which case *-lAr* is the optional 3rd person plural agreement marker that appears on the bare singular (Göksel and Kerslake 2005). The stress pattern follows from the fact that the null copula, the present tense realization of the copula *-i*, is between the noun and the person agreement marker. Being a clitic, the copula shifts the stress to the preceding syllable (e.g., Kornfilt 1996, Kelepir 2003). See fn 36.

they can also receive a predicative interpretation if they are modified, as in (92a). However, for this, they should receive an ordinary object level modification. Under taxonomic modification, as in (92b), the bare plural receives an equative reading, just like in (91).[38]

(92)   a.   Ali ve Mehmet *yakışıklı*   **doktor-lar**.
               Ali and Mehmet handsome doctor-PL
               'Ali and Mehmet are (the) handsome doctors.'

        b.   Ali ve Mehmet *pratisyen*   **doktor-lar**.
               Ali and Mehmet practitioner doctor-PL
               'Ali and Mehmet are the practitioner doctors.'

What prevents bare plurals from having property denotations if they are not modified at the ordinary object level? Notice that ordinary object-level modification is exactly the case that a singular kind term is not capable of. In other words, bare plurals are only allowed to occur as properties in the predicate position, when singular kind terms cannot occur there. They are resorted to only in case of a need. This is reminiscent of the competition between plural kind terms undergoing DKP and PI-ed singular kind terms which was discussed in Section 4.3.2. I have argued that PI blocks DKP since the *belong-to* relation has a privileged status over *pred* when it is available in grammar, and I have stated this constraint as a rule, which I repeat below.

(93)   When the *belong-to* relation and *pred* are both available in the same syntactic position, apply the *belong-to* relation.

I argue that this constraint applies in the predicate position, too. One way for bare plurals to have a property denotation is through their kind reference, i.e., by type-shifting via *pred*. Since the predicate position is one of the two places where the *belong-to* relation is

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[38]As pointed out in fn 4 in the previous chapter, Bale et al.'s 2010 claim of bare plurals to be exclusive of atoms is based on the fact that they cannot be predicated of singular subjects. Note that this is a result of a competition with singular forms due to Maximize Presupposition (Heim 1991), as in English: When bare plurals are definites, it competes with the singular definite denoted by the singular form. Similarly, when bare plurals are predicates, they compete with atomic predicates, i.e., bare singulars and singular indefinites in the predicative use.

available in the grammar, its application bleaches *pred*, by (93). The occurrence of bare plurals as definites in the predicate position, however, is freely available since they are the only means for plural definite interpretations. Therefore, no competition arises. However, why bare plurals cannot appear as properties independently of their kind reference in this position remains as an open question since it is not obvious why a singular kind term would block a plural property underived from a plural kind term. Indeed, the predicative use of an indefinite form (as in (32a)) is not blocked by the singular kind term, therefore it stays as an alternative use even when kind specification is still available.

The crucial question, though, is why there is a competition between the *instantiation-of* relation conveyed by *pred* and the *belong-to* relation after all. In both kind specification and PI, the two opponents compete for the same syntactic position. In the former case, the competition occurs in the predicate position, that is the complement position of the copula. In the latter case, it occurs in the non-case-marked direct object position, that is the complement position of the verb. Although the exact reason behind this competition is obscure at this point, it is unsurprising to see that plural kind terms systematically have an under-privileged status with respect to singular kind terms.

As discussed in Section 5.3, in Turkish singular kind terms are a direct way of referring to kinds, whereas plural kind terms represent an indirect, derived way of kind reference formed through instantiating entities, which is subject to some contextual restrictions. Recall that this disparity has been observed in their ability to name kinds and to be an argument to the verb *invent*. We have seen that singular kind terms are capable of these in Turkish, but plural kind terms are not. From an intuitive point of view, singular kind terms seem to have an ontologically privileged status compared to plural kind terms. Thus, it is not unexpected that the relation that they hold with respect to the members of the kind they denote takes over the instantiation operation *pred* when a competition takes place between the two.

9   Conclusion

This chapter has explored the nature of the constructions where bare singulars yield a number neutral interpretation. Their occurrence in the non-case marked direct object position and the existential copular construction has been analyzed as an instance of PI, and their occurrence in the predicate position has been ascribed to a special copular semantics. I have proposed that the perceived number neutrality of bare singulars in these constructions follows from their singular kind reference.

I have introduced a parametric analysis for PI. Specifically, I have followed Dayal (2011, 2015) in that PI is a sub-event type forming process that occurs with atomic properties of ordinary individuals, but I have shown that it can also occur with singular kind terms. Dayal shows that the number neutrality in the former is derived from aspectual specification. I have proposed that the latter is realized by an incorporating thematic function that defines the kind that the thematic argument of the incorporating verb belongs to with a singular kind term. The number neutrality in this case is ensured by the *belong-to* relation. We have seen that while Hindi and Hungarian PI occurs with atomic predicates at the ordinary object level, Turkish PI occurs with singular kind terms, which is taken to be the same phenomenon as English weak definites. Finally, I have analyzed the number neutrality of bare singulars in the predicate position to be a result of a phenomenon that I have called kind specification. In kind specification, a kind that the referent of a singular or plural subject term belongs to is specified through a special copular semantics, establishing a *belong-to* relation between the subject and the referent of a singular kind term.

In Chapter 5, I shift the focus from the semantics of number marking to its implications for the semantics of counting and optional classifiers. The investigation of optional classifiers extends to Western Armenian and Persian, which will reveal that the analyses offered for Turkish number marking semantics and kind reference also hold for Western Armenian and Persian. Crucially, we will see that these languages have both PI with singular kind terms and kind specification in the predicate position, just like Turkish.

4

COUNTING AND OPTIONAL CLASSIFIERS

1 Introduction

The previous two chapters have established that in Turkish, as in English, the unmarked form of nouns corresponds to singularity both in their ordinary object and kind level interpretations, and that the plural form of nouns corresponds to neutrality in number interpretation. The next step is to investigate what these findings imply with regards to the differences between the two languages in their numeral constructions (NCs, henceforth).

Chapter 2 has partially tackled these variations, focusing on the distinction in the form of the noun combining with numerals. Recall that while in English, numerals higher than 'one' require the noun to be in the plural form, in Turkish, regardless of the numeral, the noun always appears in the unmarked/singular form. Considering the case of Turkish as a potential argument for the number neutrality of the unmarked form, we have discussed two different accounts for numeral semantics, one where numerals combine with atomic properties (Ionin and Matushansky 2006, 2019), one where they have a restrictive semantics (Link 1983, Rothstein 2017). Leaving the case of English open, what mattered for our purposes has been the possibility of counting with atomic properties, at least in Turkish.

In this chapter, I will expand the investigation of NCs and offer an analysis based on the semantics of the numeral classifier, *tane*. As briefly introduced in Chapter 1, *tane* seems to be an optional classifier taking part in counting NCs. As is already known, English lacks an element of this type, therefore, this disparity between the two languages deserves our attention within the broader purpose of understanding the semantics of number marking.

Exploring the nature of *tane* is also crucial in determining the status of the Turkish number marking system among the well-known classifier languages, where nouns are argued to denote kinds uniformly and lack a systematic number marking mechanism (Krifka 1995 and Chierchia 1998b). For this reason, NCs obligate the presence of classifiers that make the atomic level of kind denoting nouns available for counting. As we have already seen, Turkish has a systematic number marking system the effects of which are also evident in reference to kinds. Yet its NCs have a classifier system, though not exhibited obligatorily.

I will start by diagnosing the characteristics of *tane* in a comparison with properties of classifiers in obligatory classifier languages. I will show that *tane* neither combines with kind denoting terms nor is it an atomizer in any other way. Instead, following Scontras (2014), I argue that NCs universally bear a cardinal head that denotes the cardinality measure function, and that *tane* is the overt realization of this head. In this account, numerals are always elements of type n referring to a number in a scale of measurement. Counting is ensured by the cardinality measure function of type $\langle n, \langle \langle e, t \rangle, \langle e, t \rangle \rangle \rangle$ that returns the cardinality relation between numbers and individuals. While the English cardinal head is always realized covertly, the Turkish cardinal head has the option of being realized overtly, as well. Furthermore, I pursue a uniform approach for the semantics of Turkish and English cardinal heads, following Ionin and Matushansky's (2006, 2019) view of numeral semantics.

I will extend the discussion to two more optional classifier languages with an aim of creating a comparative platform with respect to the optional classifier system in Turkish. These languages are Western Armenian and Persian and they have been in areal contact with Turkish due to long-standing geo-historic factors. This has resulted in similarities in vocabulary

and grammar although they belong to distinct language families. While Turkish is an Altaic language, Persian belongs to the Indo-Iranian language family and Western Armenian belongs to the more general Indo-European language family. We will see that the effects of language contact are clearly visible in their bare noun and classifier semantics.

The data regarding obligatory classifier languages is sourced from the literature cited below. The Western Armenian (WA, henceforth) data was collected from eight native speakers, six from Istanbul and two from Beirut. The Persian data was collected from nine native speakers, eight from Tehran, one from Tabriz. The data collection was done through informal interviews and a questionnaire where they were asked to rate the sentences from 1 (very bad) to 7 (very good) in a given context. Even speakers that are from the same region tend to show variation in their judgments. I try to represent these variations to the best of my ability in the discussion below.

The outline of this Chapter is as follows: Section 2 reviews the empirical picture and summarizes the two accounts that have been discussed in Chapter 2 regarding numeral semantics. Section 3 analyzes *tane* based on the properties of obligatory classifiers and shows that it differs from them in the type of the noun that it combines with. Section 4 presents the main analysis offered for *tane* and NCs, as well as its implications. Section 5 extends the analysis to WA and Persian. Section 6 concludes.

2 Background

Turkish and English NCs differ in two respects. First, as mentioned previously, there is variation in the form of the noun combining with numerals. While in English it appears in the plural form with numerals higher than 'one', in Turkish it is always realized in the singular form. Second, as opposed to English NCs, Turkish NCs bear an optional numeral classifier between the numeral and the noun (Underhill 1976, Schroeder 1992, Lewis 2000, Göksel and Kerslake 2005, Öztürk 2005).[1] An example showing these cases is given in (1).

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[1]Turkish uses two different numeral classifiers, at least to my knowledge. One is *tane* and it is compatible with all kinds of count nouns. The other is *adet* and it is compatible with non-human count nouns. In this

(1) a. one book/two books

  b. bir (tane) kitap/ iki (tane) kitap(*-lar)
    one CL   book two CL   book-PL

The difference in terms of the nominal form was already addressed in Chapter 2, where we concluded that at least in Turkish counting is achieved by atomic properties, following Ionin and Matushansky (2006, 2019). Let me briefly summarize this view.

Ionin and Matushansky (2006, 2019) argue that numerals combine with properties that have individuals of the same cardinality. This means that a numeral takes either an atomic property or a property like *hundred books*, where each individual has the cardinality 100. Turkish transparently reflects this by resorting to the singular form of the noun in its NCs. On the other hand, English seems to challenge this view at first glance, given that the noun occurs in the plural form. However, Ionin and Matushansky argue that *-s* marking appearing on the noun in English NCs is not the genuine plural marker, but is actually number agreement. Treating simplex numerals and multiplicands to have the same semantics, this account derives complex numerals compositionally.

I repeat their illustration in (2), (3), and (4) below. For expository reasons, I also provide the informal representation of *two hundred books* in (5).

(2) $[\![two]\!] = \lambda P \lambda x. \exists S \ [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S \ P(s)]$

(3) a. $\prod(S)(x) = 1$ iff

    S is a cover of x, and

    $\forall z, y \in S \ [z = y \vee \neg \exists a \ [a \leq_i z \wedge a \leq_i y]]$

  b. A set of individuals C is a cover of a plural individual X iff X is the sum of all members of C: $\sqcup C = X$

(4) $[\![two]\!](P)(x)$ is defined iff $\exists n \ \forall z \ [P(z) \rightarrow |z| = n]$

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study, I will only refer to *tane* while exemplifying NCs with classifiers due to the fact that the distribution of both classifiers is the same and *tane* is more commonly used.

(5) $\lambda x \in D_e$. x is a plural individual divisible into 2 non-overlapping individuals p_i such that their sum is x and each p_i is divisible into 100 non-overlapping individuals p_k such that their sum is p_i and each p_k is a book.

Alternatively, we have seen that Rothstein (2017) maintains the Linkian view where numerals are claimed to be restrictive modifiers (Link, 1983). She argues that multiplicands have a distinct semantics from simplex numerals. While the latter have a predicative denotation of type $\langle e, t \rangle$, the former are $\langle n, \langle e, t \rangle \rangle$ type assuming that numerals are ambiguous in having a predicative and entity type denotations. Therefore, complex numerals are derived without a need to combine with atomic properties in this account, as illustrated below.

(6)   a. $[\![two]\!] = \lambda x. |x| = 2$

       b. $[\![two]\!] = 2$

             $[\![hundred]\!] = \lambda n \lambda x. |x| = 100 \times n$

             $[\![two\ hundred]\!] = \lambda x. |x| = 100 \times 2$

We have seen that one can either follow a uniform account for Turkish and English numerals as in Ionin and Matushansky (2006, 2019), or pursue a non-uniform approach following a Linkian view as in Rothstein (2017) for English numerals. In either case, what is certain is that the case of Turkish can only be accounted for if numerals combine with atomic properties since Turkish singular nouns are singular, not number neutral.

The next issue to be resolved is the nature of the optional numeral classifier *tane*. The investigation of this little-understood element has two aspects. (i) What does it mean for Turkish to have a classifier system as opposed to English, even though the two languages share the same characteristics with respect to nominal semantics? (ii) What is the status of optional classifiers compared to the well-known obligatory classifiers?

Below, I start the investigation by addressing (ii), and then return to (i). Understanding the semantics of *tane* will also help us to determine the semantics of NCs without *tane*.

3 Obligatory Classifiers vs. *tane*

In this section, I compare *tane* with obligatory classifiers, and show that while the latter has an atomizing function, *tane* directly combines with atomic properties.

3.1 Obligatory Classifiers

Optional classifiers have not received as much attention as obligatory classifiers in the literature, therefore our understanding of numeral classifiers is based on the characteristics of obligatory classifiers. For this reason, let me first present the general view regarding their role in NCs.

In languages like Chinese, Japanese, and Korean, NCs obligatorily occur with a classifier, as exemplified for Mandarin in (7) (Cheng and Sybesma 1999, pg. 514) (see also Jiang 2012 and Kim 2009 for Mandarin, Japanese, and Korean, among others).

(7)   a.   san   *(ge) ren
             three CL   people
             'three people'

        b.   san   *(zhi) bi
             three CL   pen
             'three pens'

These languages lack overt determiners, so their bare nouns can freely appear in argument positions (Chierchia 1998b, Krifka 1995). Differently from Turkish, a bare NP language with a systematic number marking system, Mandarin bare nouns yield a number neutral interpretation, optionally allowing the plural marker under certain conditions. Plural markers in these languages mark more than plurality. For example, Chinese plural marker *-men* (see Yang 2001), and Japanese plural marker *-tachi* (see Kurafuji 1999) include definiteness in their denotation, whereas Korean plural marker *-tul* denotes specificity (Kim, 2009). Consider the following contrast in Mandarin (Li 1999, pg. 78):

(8)   a.   wo qu zhao haizi.
            I   go find child
            'I will go find a child/children/the child/the children.'

    b.   wo qu zhao haizi-men.
            I   go find child-PL
            'I will go find the children.'

As is evident in the translation of (8a), bare nouns can receive definite and non-specific indefinite interpretations (Yang 2001). In addition, they can also receive kind, generic, and DKP-based narrow scope existential readings, as shown in (9) (Yang 2001, pg. 20, 32).

(9)   a.   Gou juezhong le
            dog extinct   ASP
            'Dogs are extinct.'

    b.   Gou hen jiling
            dog very smart
            '(The) dog(s) is/are intelligent.'

    c.   Waimian gou zai-jiao
            outside   dog be-barking
            'Outside, (dogs)/(the) dog(s) are/is barking.'

They seem to behave like bare plurals in Turkish in being number neutral and in allowing kind-based interpretations, as well as definite readings (see Yang 2001). Following the generally accepted view due to the initial studies of Chierchia (1998b), bare nouns of these languages are uniformly kind terms of type $\langle s, e \rangle$, which undergo DKP for narrow scope existential readings, or *pred* followed by *iota* type-shifting for definite readings in episodic contexts (see also Krifka 1995).[2]

In other words, as opposed to Turkish, in languages like Chinese, the morphological and semantic (un)markedness align with each other. Morphologically unmarked bare nouns

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[2]Cheng and Sybesma (1999) show that differently from Mandarin, in Cantonese, definiteness is achieved by the CL+noun combination.

are also unmarked in terms of number denotation, whereas morphologically marked optional plural forms correspond to a semantically marked denotation, yielding definiteness/specificity, hence exclusive plural interpretation. This shows that the type of the nouns that the classifier combines with in Turkish differs from these languages, signaling that obligatory and optional classifier systems should be distinct from each other.

Chinese-like languages require a mediator between bare nouns and numerals. This is because the atomic instances of kind denoting bare nouns are not available for counting, in light of the view pursued here that atoms are crucial in counting. This mediation is already identified as a part of an obligatory classifier system in Chierchia (1998b) and Krifka (1995). Obligatory classifiers take a kind term and return sets of atomic instantiations of the kind. This set, in return, becomes available for counting. In light of this view, the combination of the classifier and the noun in (7b) can roughly be represented as below.

(10)   a. $[\![zhi]\!] = \lambda k \lambda x. ^\cup k(x) \wedge AT(x)$

         b. $[\![bi]\!] = pen^k$

         c. $[\![zhi\ bi]\!] = \lambda x. ^\cup pen^k(x) \wedge AT(x)$

Tu sum up, obligatory classifiers take kind denoting nouns and atomize them for the purposes of counting.

3.2   Is *tane* an Atomizer?

The previous section has established that the nominal semantics of obligatory classifier languages is different from that of Turkish, therefore, the semantics of the numeral classifiers is also expected to be distinct in the two languages. This section confirms this expectation and shows that *tane* is not an atomizer for it combines with properties that are already atomic.

There are two possible cases where *tane* could have an atomizer semantics. It could be so either if it combined with kind denoting nouns as obligatory classifiers do, or alternatively if it combined with mass properties. Below, I discuss and eliminate each case.

3.2.1 Why not atomizers with kind terms

As we have concluded previously, Turkish aligns with languages like English in its nominal semantics overall. Crucially, both bare plurals and singulars have kind reference. Following Chierchia (1998b) and Dayal (2004b), I have argued that plural kind terms are derived by *nom* and undergo *pred* in object-level contexts. Following Dayal (2004b), I have argued that bare singulars are ambiguous between atomic properties of ordinary and taxonomic individuals, the combination of the latter with *iota* yielding singular kind reference.

Singular kind terms are conceptually plural associated with the same set of object-level individuals as plural kind terms, but they are grammatically impure atomic like group terms, not allowing grammatical access to these individuals. What matters for our purposes is the fact that singular kind terms cannot be type-shifted into predicative type as opposed to plural kind terms, which is a requisite for an atomizer semantics. If *tane* combined with kind denoting nouns, we would expect its complement to be plural nouns, not singular nouns. This is because it is only possible for plural kind terms to be instantiated and atomized by classifiers. However, *tane* cannot combine with plural nouns, as repeated below.

(11) *iki   tane kitap-lar
       two CL   book-PL
       'two books'

I have also discussed a phenomenon where singular kind terms are associated with the object-level individuals that they are conceptually related to in the predicate position of the copular construction. This phenomenon, which I have called *kind specification*, deserves some discussion here since it could potentially be extended to NCs with *tane*.

Recall that Turkish bare singulars are compatible with plural subjects in the predicate position of the copular construction when they are either unmodified or accompanied by modification operating at the taxonomic domain. When they receive object level modification, they are atomic predicates which are only compatible with singular subjects:

(12) a. Ali (ve Mehmet) *pratisyen*   doktor.
          Ali and Mehmet   practitioner doctor
          'Ali is a practitioner doctor./Ali and Mehmet are practitioner doctors.'

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

I have explained this puzzle by claiming that (12a) exemplifies a phenomenon where the bare singular *doktor* appears as a singular kind term specifying the kind that the subject term belongs to through a *belong-to* relation. Since it is a singular kind term, only taxonomic modification is available.

Can we also claim that a similar kind of phenomenon occurs in NCs with *tane*? In other words, are singular nouns that *tane* combines with singular kind terms, as is the case with the copular construction shown above? If yes, then, we should expect the same kind of restriction on them in terms of modification, but this does not hold. Singular nouns in NCs (with or without *tane*) can receive object level modification, as exemplified in (13).[3] As further illustrated in (13b), this is also the case for other object level modifiers such as the adjective *eski* 'old' which has also been shown to be incompatible with pseudo-incorporated singular kind terms in the previous chapter. Because of this contrast, we cannot equate the two phenomena.

(13) a. Sevgi iki (tane) *yakışıklı*   doktor-a   mesaj at-mış.
          Sevgi two CL   handsome doctor-DAT text   send-EVID
          'Apparently, Sevgi texted two handsome doctors.'

    b. Bana iki   (tane) *eski* kitap ver-di.
          to.me two CL   old book give-PAST
          '(S)he gave me two old/worn-out books.'

In sum, *tane* does not combine with kind terms, in contrast to obligatory classifiers.

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[3] I thank Lucas Champollian for suggestions to explore this point.

3.2.2 Why not atomizers with mass terms

Alternatively, *tane* could have an atomizer semantics if it combined with mass nouns. Now, let us see why this does not hold.

To begin with, this is not possible with regular mass nouns as evidenced by their incompatibility with *tane*, as illustrated in (14a) and (14b). This contrasts with canonical atomizing elements like *damla* 'drop' which is exemplified in (14c).[4]

(14)　a.　*iki　tane pirinç
　　　　　two CL　rice
　　　　　Intended: 'two grains of rice'

　　　b.　*iki　tane kan
　　　　　two CL　blood
　　　　　Intended: 'two drops of blood'

　　　c.　iki　damla kan
　　　　　two drop　blood
　　　　　'two drops of blood'

Instead, let us consider the following possibility.

Rothstein (2017) claims that in Brazilian Portuguese (and Hungarian) all singular nouns are in fact flexible and can either be singular count nouns or mass expressions, analogous to *stone/stones* pair in English. The mass denotation of bare singulars is identified as object mass nouns, which denote sets of naturally individuable units like *furniture*, in contrast to mass nouns that denote portions of matter (see also Barner and Snedeker 2005).[5]

Rothstein shows that in Brazilian Portugese, object mass nouns such as *mobília* 'furniture' allow distributive predicates and can be antecedents of reciprocals in contrast to the ones

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[4](14a) and (14b) would be good with a coerced reading where rice/blood is considered to come in packed units (universal packaging). Additionally, a grain of rice is expressed as *prinç tane-si* 'rice item/grain' in Turkish. Here, *tane* is a relational noun meaning 'the smallest item/grain/seed'. Therefore, it appears in a compound structure. It is also used with *mısır* 'corn' as in *mısır tane-si* to mean 'corn seed'. This is different from the classifier *tane* and the two can co-occur in the same structure: *iki tane pirinç tane-si* 'two rice grains'.

[5]Other terminology used for *furniture*-type mass nouns are 'count mass' (Doetjes 1997), 'fake mass' (Chierchia 2010), 'aggregates' (Pullum et al. 2002), and 'neat mass' (Landman 2011), among others.

in English. In addition, while count nouns force a comparative evaluation in terms of cardinality, object mass nouns allow it but do not force it. So, singular nouns that are part of a flexible pair are compatible with a comparative evaluation in terms of both cardinality and a non-cardinal measure dimension.

If this were also the case in Turkish, we could simply claim that singular nouns combining with *tane* are object mass nouns. Thus, we could posit an atomizer semantics to *tane* similar to obligatory classifiers. However, Turkish bare singulars do not have a flexible denotation.[6]

Unlike object mass nouns that are compatible with a comparative evaluation in terms of both cardinality and a non-cardinal measure dimension, bare singulars in Turkish are only compatible with a comparative evaluation in terms of cardinality. This contrasts with Brazilian Portuguese (see Rothstein 2017 for Brazilian Portuguese).

(15)   a.   Ali-nin Merve-den daha çok mobilya-sı   var.
             Ali-GEN Merve-ABL more very furniture-3SGPOSS have
             'Ali has more furniture than Merve.'

        b.   Ali-nin Merve-den daha çok kitab-ı   var.
             Ali-GEN Merve-ABL more very book-3SGPOSS have
             'Ali has more books than Merve.'

While (15a) compares quantities of furniture in terms of numbers of pieces, if it is followed by a context such as 'He will need a larger moving truck.' it naturally compares their volume. On the other hand, for (15b), a comparison based on volume is not possible, and it can only mean that Ali has a higher number of books than Merve regardless of the size of his books or the amount of pages that his books have.

In addition, contrasting with *mobília* in Brazilian Portuguese, but similar to *furniture* in English, *mobilya* in Turkish does not allow distributive predication and it cannot be an antecedent for reciprocals, as shown in (16). This shows that object mass nouns in Turkish

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[6]Notice that *tane* is compatible with object mass nouns like *mobilya* 'furniture' and *mücevher* 'jewelry'. This is because all object mass nouns in Turkish are flexible in that they can also refer to singularities of relevant pieces (e.g., a piece of furniture or jewelry), hence be pluralized. Therefore, such nouns are compatible with *tane* as well as other atomizers that combine with mass nouns only, e.g., *parça* 'piece'.

are not similar to their Brazilian Portuguese counterparts.

(16)   a. Ikea-dan al-dığ-ımız   mobilya yüz   kilo ağırlığ-ın-da.
             Ikea-LOC buy-REL-1PLPOSS furniture hundred kilo weight-3SGPOSS-loc
             'The furniture that we bought from Ikea weighs 100 kilos.' (the total weight)

        b. *Ikea-dan al-dığ-ımız   mobilya birbiriy-le   çok uyumlu.
             Ikea-LOC buy-REL-1PLPOSS furniture each.other-with very compatible
             Intended: The pieces of the furniture that we bought from Ikea fit into each

             other.'

Finally, it is worth pointing out that in Turkish some nouns seem to have a mass-like interpretation. This could conceivably be taken as evidence for their object mass denotations. These are nouns that denote professional or social roles and nouns that denote products, goods, etc., such as vegetable/fruit nouns. However, there are restrictions on this interpretation. First, the referents of these bare singulars have to be in abundance, which is not necessarily the case with regular object mass nouns. Second, it is only available in professional and report contexts, as exemplified below.

(17)   Bu sene topla-n-an   elma soğuk hava depo-su-nda   sakla-n-ıyor.
        this year pick-PASS-REL apple cold   air   storage-3SGPOSS-LOC keep-PASS-PROG
        'The apples that have been picked this year are kept in the cold air storage.'

In (17), a worker (or the farmer maybe) is talking about the apples that they have picked this year, and it can only describe a situation where a large amount of apples is at issue, not a few of them. This mass-like interpretation disappears if *elma* is used out of such contexts, as shown in (18), where it can only convey singularity. Imagine that there is an apple tree in our garden and we picked some/a lot of apples from it.

(18)   Topla-dığ-ımız   elma*(-lar)-ı masa-nın üstü-ne koy-du-k.
        pick-REL-1PLPOSS apple-PL-ACC table-GEN top-DAT put-PAST-1PL
        'We put the apples that we picked on the table.'

Additionally, consider (19a) which could be a part of a newspaper report, for example. Again, the teachers that are being referred to are understood to be massified in a sense. The statement is not about only a few teachers. On the other hand, this interpretation is not available out of such contexts, as illustrated in (19b).

(19)   a.   Öğretmen hakket-tiğ-i   maaş-ı   yine al-a-ma-dı.
            teacher   deserve-REL-3SGPOSS salary-ACC again get-ABIL-NEG-PAST
            'Teachers couldn't get the salary that they deserve again.'

        b.   Öğretmen bahçe-de   yürüyüş yap-ıyor.
            teacher   garden-LOC walking do-PROG
            'The teacher is walking in the garden.'

            Not: '(The) teachers are walking in the garden.'

No matter how we capture this interpretation, such bare singulars should not be considered as object mass nouns, because they allow distributive predication and can be antecedents for reciprocals, as shown in (20), which could be uttered among a group of teachers.[7]

(20)   Öğrenci bu sene birbiri-ne   çok yardım et-ti.
        student this year each.other-DAT very help-PAST
        'Students helped each other a lot this year.'

In addition, we should not forget that the 'mass-like' interpretation is not available for all bare singulars, but only for a subset of them and only in certain contexts. Hence, it would be misleading to generalize such a restricted behavior to the broader class of bare singulars.

To conclude, given the difference between this phenomenon and well-defined object mass nouns and the fact that it is only applicable to some classes of bare singulars in professional/report contexts, I conclude that Turkish bare singulars cannot be analyzed as object mass nouns. Also considering the conclusion reached in the previous section with regards to the singular kind analysis, I argue that nouns combining with *tane* denote atomic properties.

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[7]Other commonly used nouns with a similar behavior are *seyirci/izleyici* 'audience', *çiftçi* 'farmer', *hasta* 'patient', etc. Notice also that we cannot equate the behavior of such nouns with plural kind terms. Otherwise, we would expect a DKP-based existential interpretation in (19b), contrary to the facts. See fn 20 in Chapter 2.

4   The Semantics of Numeral Constructions and *tane*

So, as concluded above, counting requires atomic properties in Turkish regardless of whether NCs have the classifier *tane* or not. Furthermore, we have seen that *tane* cannot be an atomizer. Then, why would a language employ a classifier system if it is not required for the purposes of atomization in counting? The answer I want to propose is that it is needed for counting itself.

I follow Scontras (2014) in that cardinal numerals are formed on the basis of a cardinal head, and what we assume is done by numerals of type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$ (or $\langle e, t\rangle$) is actually achieved by this cardinal head. Numerals are only individual denoting expressions of type n, referring to a number (Landman, 2004).

I suggest that the semantics of the cardinal head is uniform across languages. Given that the Turkish facts are only accounted for if counting occurs with atomic properties, I adopt Ionin and Matushansky's (2006, 2019) view of numerals and apply it to the cardinal head instead. Namely, I argue that the cardinal head denotes the cardinality measure function. It takes a number n and an atomic property P, and returns a set of individuals x that have the cardinality n and the atomic parts of each x is a P. While in Turkish the noun directly appears in the singular form due to the atomicity requirement of the cardinal head, in English it further reflects morphological number agreement on it.[8]

I propose that *tane* is simply the overt realization of the cardinal head (cf. Sağ 2018). In other words, the Turkish optional classifier ensures counting itself, rather than serving it as an atomizer. Based on this, the overt and covert cardinal heads are of type $\langle n, \langle\langle e, t\rangle, \langle e, t\rangle\rangle\rangle$ and presuppose for atomic properties, as represented below.[9]

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[8]Scontras (2014) pursues a Linkian view of numeral semantics and derives the difference in the form of the nouns in Turkish and English by number agreement. He argues that there is a number head above NCs achieving this. In English, it takes absolute atomicity as the basis, hence marks the result of NCs with numbers higher than *one* as plural. In Turkish, it takes relativized atomicity as the basis, hence considers each individual in the denotation of the NC as an atomic individual, and marks the result as singular. See also Martí (2019) for a similar view.

[9]I will revise the semantics of *tane* in Chapter 5.

(21) $[\![Card_\emptyset/tane]\!] = \lambda n\lambda P\lambda x\colon \forall y\ [P(y) \to AT(y)].\ \exists S\ [\prod(S)(x) \wedge |S| = n\ \wedge$

$$\forall s \in S\ P(s)]$$

(22) a. $\prod(S)(x) = 1$ iff

S is a cover of x, and

$\forall z, y \in S\ [z = y \vee \neg\exists a\ [a \leq_i z \wedge a \leq_i y]]$

  b. A set of individuals C is a cover of a plural individual X iff X is the sum of all members of C: $\sqcup C = X$

Below is the derivation of $[[iki(tane)]kitap]$ 'two books', where AT in P_{AT} is short for the presuppositional content.

(23) a. $[\![book]\!] = \lambda x.book(x)$

  b. $[\![Card_\emptyset/tane]\!] = \lambda n\lambda P_{AT}\lambda x.\ \exists S\ [\prod(S)(x) \wedge |S| = n \wedge \forall s \in S\ P(s)]$

  c. $[\![two]\!] = 2$

  d. $[\![two\ Card_\emptyset/tane]\!] = \lambda P_{AT}\lambda x.\ \exists S\ [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S\ P(s)]$

  e. $[\![two\ Card_\emptyset/tane\ book]\!] = \lambda x.\ \exists S\ [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S\ book(s)]$

Informally, *iki (tane) kitap* 'two books' denotes a set of plural individuals x divisible into 2 non-overlapping individuals such that their sum is x and each individual is a book.

Then, we can conclude that the disparity between English and Turkish NCs in the form of the noun does not imply variation in the semantics of number marking. Here, the cardinal head is treated to have a uniform semantics across languages, but this conclusion would also hold even if one considers it to be parametrized across languages. Similarly, the fact that Turkish NCs bear an optional numeral classifier in contrast to English NCs does not point to a contrast in the nominal semantics of the two languages. In English, the cardinal head is always realized covertly, and in fact this is the case in many other languages. On the other hand, Turkish is special in also hosting the overt version of this head as well as the covert one, which explains the optional status of *tane*. It is also worth noting that the

optionality is not an inherent property of such numeral classifiers. In fact, it would be possible to find languages where the cardinal head is always realized overtly.

The investigation also clearly indicates that the presence of a numeral classifier in Turkish NCs does not mean that Turkish patterns with obligatory classifier languages in its nominal semantics. Crucially, I have demonstrated that the correlation between the morphological and semantic (un)markedness in Turkish is the opposite of the one attested in these languages, and that *tane* has a distinct semantics from obligatory classifiers.

Given that *tane* and obligatory classifiers have separate roles, we also expect a cardinal head besides the obligatory classifier in NCs of languages like Chinese. It could either be the case that it is a separate covert head or its semantics is intertwined with the atomizing classifier. In fact, the latter is argued by Krifka (1995) where obligatory classifiers are analyzed as functions that take kinds and yield a cardinality measure function that measures the number of specimens of that kind. Similarly, Scontras (2014) analyzes them as having the dual role of atomization and denoting the cardinality measure function.

I leave the exploration of this for further research. However, in Turkish *tane* does not appear with canonical atomizers, as shown in (24), implying that it could be the case that the cardinal and atomizing functions are realized by one lexical item when atomizers are present.

(24)   iki   (*tane) damla kan
        two CL   drop   blood
        'two drops of blood'

Notice, though, the optional classifier of WA, *had*, which we will analyze in more detail below, can co-occur with such atomizers, as exemplified in (25). This shows that atomizers and the cardinality measure function can be spelled-out as separate heads, but further research is required to understand what determines these choices.[10]

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[10]Other examples are *jergu (had) kilo xəntsor* 'two CL kilos of apples' and *jereg (had) dup kirk* 'two CL boxes of books'. However, the consultants report that the use of *had* with other quantizing nouns gives the flavor of "listing".

(25)   jergu (had) gatil arujn (WA)
           two   CL   drop blood
           'two drops of blood'

Before concluding this section, there are two more issues that we have yet to consider: the derivation of complex numerals and the syntactic position of the cardinal head.

Let me start with complex numerals. One possible way would be to derive them compositionally as in Ionin and Matushansky (2006, 2019), but with recurring cardinal heads instead. This would mean that the overt version of this head, *tane* could be multiplied for each numeral in a numeral complex. This is not the case as shown in (26), where *tane* only follows the numeral closest to the noun.

(26)   iki (*tane) yüz   (tane) elma
           two CL   hundred CL   apple
           'two hundred apples'

One other way would be to follow Rothstein's (2017) view where multiplicands like *hundred* are treated to have separate semantics than simplex numerals. In other words, for multiplicands, we could posit a similar semantics as *tane*, and argue that they are special cardinal heads. For example, like *tane*, *hundred* would bear the cardinality measure function in its denotation, but differently from it, it would come with a predetermined cardinal base, i.e., 100, and it would require a multiplier in its semantics.

To begin with, this account would leave the case where multiplicands co-occur with *tane* as in (26) unexplained. If multiplicands already came with a cardinality measure function, NCs formed with them would never have *tane* between the multiplicand and the noun. Recall also that one other problem with this analysis is that in languages like French and also in Turkish, multiplicands cannot combine with the numeral 'one', as opposed to languages like English, weakening the claim that they require multipliers in their denotation. In addition, while this view explains complex numerals like *two hundred*, it still remains vague how expressions like *twenty-two* or *two hundred and twenty* are derived. Rothstein (2017)

argues that while complex numerals involving cardinals higher than *hundred* are derived in the syntax, the lower ones like *twenty-two* are constructed in the lexicon. Furthermore, she derives cardinals like *two hundred and twenty* by treating *and* as an additive operator which operates on two numbers of type n. In her view, *two hundred* is first derived from *hundred* of type $\langle n, \langle e, t \rangle \rangle$, then shifted into n type by a nominalization operator. The complex number resulting from the addition of the two numbers then shifts to the predicate type.

Instead, I choose to follow a straightforward solution to this issue, where complex numerals are directly derived by covert arithmetic operators, multiplication and addition, the result of which is a complex number that feeds the argument slot of the cardinality measure head as a unit. For example, *two hundred* is derived as a complex number through a covert multiplication operation that takes two numbers and multiplies them. Then, the output becomes an argument to the cardinality measure function. Likewise, *twenty-two* is derived by the additive operator and *two hundred and twenty* is derived by the multiplication and additive operators, the outputs of which, then, feed the argument slot of the cardinality function as a unit (cf. Ionin and Matushansky 2006, 2019). This explains why *tane* cannot occur after each numeral in a numeral complex and is compatible with the fact that multiplicands can co-occur with *tane*.

Finally, let me elaborate on the syntactic status of the cardinal head. This is another place where Turkish and English NCs diverge.

Numerals are argued to be heads that take the nominal projection as their complement in Ionin and Matushansky (2006, 2019) (see also Ritter 1991, Giusti 1991, Zamparelli 2000, Simpson 2005 for the head analysis of numerals). Integrating this view to the analysis offered here, I propose that English cardinal head takes the nominal phrase as its complement (Scontras, 2014). On the other hand, in Turkish the cardinal phrase is in the specifier of the nominal projection (cf. von Heusinger and Kornfilt 2017). This claim is based on the fact that contra English, the deletion of the noun following the numeral or the numeral+*tane* combination yields ungrammaticality in Turkish, as shown below.[11]

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[11]We will see in Chapter 4 Section 8.1 that the presence of the optional classifier *tane* is grammatical in some other cases. We will also see that it follows from the availability of an intransitive semantics for *tane*.

(27) *Bana (elma-lar-dan) **iki** (**tane**) ~~elma~~-yi ver-ir mi-sin?
      to.me apple-PL-ABL two CL apple-ACC give-AOR QUEST-2SG
      'Can you give me two (out of the apples)?'

Following Lobeck (1995) and Ionin et al. (2006) in taking such structures to involve a deleted noun which needs licensing by a head (proper head-government), I suggest that the case of Turkish stems from the syntactic position of the cardinal head (cf. Sağ 2018, see also Selkirk 1977, Li 1999, Borer 2005 for the phrasal analysis of numerals).[12] Since it is not a c-commanding head for the deleted noun, it cannot properly govern it, in contrast to the cardinal head in English.

Based on this, English and Turkish NCs are represented as follows:

(28) a. English
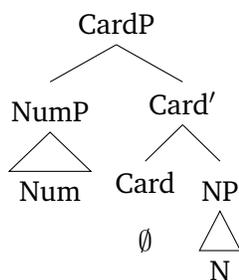
      b. Turkish
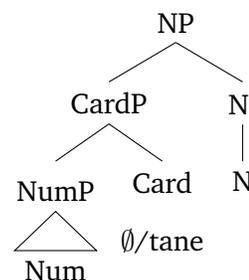
To wrap up, I have argued that counting expressions are formed on the basis of a cardinal head that denotes the cardinality measure function of type $\langle n, \langle \langle e, t \rangle, \langle e, t \rangle \rangle \rangle$ (Scontras, 2014), and that the optional numeral classifier *tane* is simply the overt realization of it.

However, our knowledge of optional classifiers is extremely limited. Although the investigation of Turkish *tane* has been a good start to expand it, it is not enough. Therefore, in the rest of this chapter, with an aim to bring new insights into the optional classifier system, the findings are compared with two more optional classifier languages, WA and Persian.

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[12]In Ionin and Matushansky (2006) languages where numerals assign case to their nominal complements are argued to have the structure where cardinal numerals take the nominal phrase as their complement. Although English numerals do not pattern with this, they prefer to posit the same structure for them. However, the one suggested here for Turkish does not conflict with their semantic account of numerals. In addition, because Turkish numerals do not assign case to nouns it is safe to assume a structure where numerals are in the specifier of nominal projections in Turkish.

We will see that these languages pattern with Turkish both in their nominal and classifier semantics.

5 Western Armenian and Persian Optional Classifiers

5.1 Overview of Western Armenian and Persian Numeral Constructions

WA and Persian NCs are similar to Turkish NCs in featuring an optional classifier, *had* in the former, *tā* in the latter (Sigler 1996, Borer 2005, Bale and Khanjian 2008, 2014, Khanjian 2013 for WA and Gomeshi 2003, Gebhardt 2009 for Persian).[13]

(29)   jerek (had) havgit (WA)
        three CL   egg
        'three eggs'

(30)   se   (tā) toxm-e morgh (Persian)
        three CL   egg
        'three eggs'

Persian differs from WA and Turkish in that NCs without *tā* are judged to be very formal, used in written language mostly, while NCs with *tā* are used in daily speech and are more common than NCs without it. Therefore, the judgments regarding NCs without *tā* in Persian are subtle. In contrast, Turkish and WA NCs without the classifier could be considered to be a more readily available usage, though the form with the classifier is a common enough part of the daily language, as well. On the other hand, differently from Turkish NCs, WA and Persian NCs can bear the plural marker, adding a specific reading in the former (see Sigler 1996) and a definite reading in the latter (see Gomeshi 2003). Persian NCs can only bear the plural marker when the classifier is present, as shown in (31).[14]

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[13]The WA data is represented with IPA symbols provided by Hossep Dolatian, a phonologist who is one of the consultants. The Persian data is represented with the orthography adopted from Jasbi (2016).

[14]The marker *-rā/-ro* is named to be an object marker (OM) in Jasbi (2019a). It is only attached to direct objects, and Jasbi (2019a) analyzes it as an object marker that presupposes existence (cf. Karimi 1990, Gomeshi

Context: Amir and Hooman are walking on the street, and two girls pass by them. Amir says:

(31)   Do *(tā) doxtar-hā-ro didi?
        two CL girl-PL-OM saw.2SG
        'Did you see the two girls?'

In WA, although the literature reports that the plural marker is only available for NCs without *had* (Sigler 1996, Borer 2005, Bale and Khanjian 2008, 2014, Khanjian 2013), the consultants from Beirut also use it when *had* is present, as shown in (32).[15] In both cases, the plural marker adds a specific interpretation, as represented in the translations of the sentences. Differently from the speakers in Beirut, the speakers in Istanbul can only use the plural marker in NCs without *had*, though they report that the plural marked NCs in general are not preferred colloquially, but used only in written language. Therefore, unlike Beirut WA, NCs in Istanbul WA can receive specific readings in the absence of the plural marker.[16]

(32)   a. g-uz-em   jergu (had) piɣ   desn-el kazananoʦ-i-n meʧ
                INDC-want-PRES1SG two CL   elephant see-INF zoo-GEN-DEF   inside
                'I want to see two elephants in the zoo.' (want > two)

        b. g-uz-em   jergu (had) piɣ(%-er)   desn-el kazananoʦ-i-n meʧ
                INDC-want-PRES1SG two CL   elephant-PL see.INF zoo-GEN-DEF   inside
                'I want to see two elephants in the zoo.' (two > want)

In order to understand the semantics of NCs in WA and Persian, below I analyze their internal properties, sketching the nominal semantics first and then the semantics of the classifier and the plural marker in NCs of the two languages. I show that WA and Persian pattern with Turkish in that their bare singulars denote atomic properties and their bare plurals denote number neutral properties. Based on that, I will show that the classifiers of

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1996, Modarresi 2014, among others). This is exactly what Kelepir (2001) has argued for the accusative case-marking of Turkish. Therefore, they can be considered to be markers of the same kind. However, following the convention in the literature, I will represent *-rā/-ro* as OM in the glossing.

[15]This fact is also reported in Martí (2019).

[16]Note that I use the terms "Beirut WA" and "Istanbul WA" with reference to my consultants and it is not a claim about dialects specific to those regions.

the two languages do not have an atomizer role, but instead are the overt realization of the cardinality measure function, requiring atomic properties to combine with.

5.2 The Semantics of Number Marking in Western Armenian

WA bare singulars have been claimed to be 'number neutral' by Bale and Khanjian (2008, 2014) and Bale et al. (2010), where they also argue that bare plurals of WA are strictly plural excluding atomic individuals in their denotation. However, as is also pointed out in Martí (2019), their assumptions and conclusions are empirically controversial.

WA bare nouns behave very similarly to Turkish bare nouns in the following respect: First of all, the language has both singular and plural kind reference. However, it differs from Turkish in having an overt definite article with singular kind terms, as shown in (33b), also featuring it optionally in plural kind terms, as shown in (33a). The optionality of the definite marker in the plural case is regulated by the position of the bare/definite plural. In the pre-verbal position the bare and definite forms are both possible while the bare form is not used when there are intervening elements between the plural noun and the verb.

(33)   a.   ar͡tʃ-er(-ə)   zark-a͡ts-an   asja-ji-n   me͡tʃ
           bear-PL-DEF evolve-PAST-3PL asia-GEN-DEF in
           'Bears evolved in Asia.'

       b.   ar͡tʃ-ə   zark-a͡ts-av   asja-ji-n   me͡tʃ
           bear-DEF evolve-PAST-3SG asia-GEN-DEF in
           'The bear evolved in Asia.'

Additionally and expectedly, the definite singular and bare/definite plural kind terms of WA can be used in generic contexts, as shown in (34), but the distributivity test applied in (35) distinguishes the two types of kind reference. As a reminder, we have used this test to show that definite singular kind terms do not allow semantic access to object level individuals they are associated with, hence they are impure atomic in nature, in contrast to plural kind terms. The fact that the definite singular kind term in (35b) is incompatible with the reciprocal shows that they also have an impure atomic nature in WA.

(34) a. əntanrabes art͡ʃ-er(-ə) vajri g-əll-an   jerp vor d͡zənunt
          generally bear-PL-DEF wild INDC-be-PRES3PL when that birth
          gu-d-an
          INDC-give-PRES3PL
          'Generally, bears become wild when they give birth.'

      b. əntanrabes art͡ʃ-ə   vajri g-əll-a   jerp vor d͡zənunt
          generally bear-DEF wild INDC-be-PRES3SG when that birth
          gu-d-a
          INDC-give-PRES3SG
          'Generally, the bear becomes wild when it gives birth.'

(35) a. əntanrabes, gadu-ner-??(ə) irar-u   vəra-n gə-hart͡sag-in
          generally   cat-PL-DEF   each.other-DAT on-DEF INDC-attack-PRES3PL
          'Generally, cats attack each other.'

      b. *əntanrabes, gadu-n irar-u   vəra-n gə-hart͡sag-i
          generally   cat-DEF each.other-DAT on-DEF INDC-attack-PRES3SG
          'Generally, cats attack each other.'

WA bare plurals can also be used as narrow scope existentials in episodic contexts, but
this is impossible for the definite singular forms, which can only be interpreted as definite
singulars, as exemplified in (36). Notice, however, that if the definite article is added to
the plural in episodic contexts, they are interpreted as definite plurals, not existentially,
regardless of the position of the plural in the sentence.

(36) a. turs-ə   manug-ner gə-xaɣ-an-gor
          outside-DEF child-PL   INDC-play-PRES3PL-PROG
          'Children are playing outside.'

      b. turs-ə   manug-ə gə-xaɣ-a-gor
          outside-DEF child-DEF INDC-play-PRES3SG-PROG
          'The child is playing outside.'

Interestingly, though, if the singular form appears without the definite marker, it can be
used as a narrow scope existential with a number neutral meaning, as shown in (37). Not
surprisingly, this is restricted to the pre-verbal position, which could host either a subject or
an object. The interaction of the sentences in (37) with negation given in (38) shows both
the narrow scope and number neutral readings of bare singulars occurring in this position.

(37) a. turs-ə   manug gə-xaɣ-a-gor
        outside-DEF child   INDC-play-PRES3SG-PROG
        'A child is playing outside./ Children are playing outside.'

     b. John-ə   kirk gə-gart-ar-gor
        John-DEF book INDC-read-IMPERF3SG-PROG
        'John was reading a book/books.'

(38) a. turs-ə   manug t͡ʃ-i   xaɣ-ar-gor
        outside-DEF child   NEG-PRES3SG play-NegPart-PROG
        'Children aren't playing outside.' (no children)

     b. John-ə   kirk t͡ʃ-er   gart-ar-gor
        John-DEF book NEG-IMPERF3SG read-NegPart-PROG
        'John wasn't reading a book/books.' (no books)

These facts can be accounted for by the analysis proposed for Turkish bare nouns. Namely, it can be argued that WA singular nouns denote sets of atomic individuals, and these atomic individuals can either be ordinary individuals or taxonomic individuals, i.e., kinds. When the definite determiner combines with the former, it yields a definite singular interpretation, whereas when it occurs with the latter, it yields an impure atomic singular kind interpretation, just as in English.

WA plurals denote number neutral sets, which can be turned into plural kinds via the covert *nom* operator in the pre-verbal position or by the definite article itself otherwise. This is in line with the facts of Italian where kind reference is achieved with the definite article, though bare plurals can also have kind reference when they are governed by a lexical head like V (Chierchia 1998b). Following Contreras (1986) and Longobardi (1994, 2000), we can argue that this follows from the licensing requirements of the empty D in the case of bare plurals, which are satisfied by the c-commanding lexical V head.

The narrow scope existential reading of bare plurals, then, is due to DKP, which introduces local $\exists$-quantification over the instantiations of the kind provided by *pred* in a given situation. This ensures a number neutral reading for bare plurals since *pred* returns the set of atomic and plural instantiations of a kind. The number neutrality of bare plurals is also

evidenced under downward-entailing contexts and questions:[17]

(39) a. turs-ə   manug-ner t͡ʃ-en   xaɣ-ar-gor
          outside-DEF child-PL   NEG-PRES3PL play-NEGPART-PROG
          'Children aren't playing outside.' (no children)

      b. jete gin-er-e   tavaʒan-v-et͡sar,   gərnas   mer xump-i-n
          if   woman-PL-ABL betray-PASS-2SGPAST can.2SGPRES our group-DAT
          mijanal.
          join.INF
          'If you are betrayed by women, you can join our group.' (one or more women)

Context: We go to the forest for hiking and see one bear there. When we come home our friend asks whether we have come across bears.

(40) art͡S-er des-ak?
      bear-PL see-2PLPAST
      'Did you see bears?'

      a. ayo meg had mə   des-ank
          yes one CL INDEF see-1PLPAST
          'Yes, we saw one.'

      b. #vot͡ʃ (minag) meg had des-ank
          no   only   one CL see-1PLPAST
          'No, we (only) saw one.'

What about bare singulars? I argue that (37a) and (37b) are instances of subject and object pseudo-incorporation respectively, and bare singulars in these sentences are singular kind terms, with an empty D licensed by the lexical verb (cf. Sigler 1996).[18] The fact that they undergo PI is evidenced by the modification facts. Just as is the case in Hindi and

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[17]Bale and Khanjian (2008, 2014) and Bale et al. (2010) argue that plurals in WA are strictly plural providing examples that exhibit exclusive denotations in these contexts. However, all of their examples contain the predicate *uni* 'have'. This is one place where bare singulars have a number neutral reading similar to the case in Turkish existential copular construction (see Sigler 1996). I suggest that this could have a potential effect on the seemingly exclusive reading of bare plurals. As is clear in the examples below, once we move away from the predicate *uni* their number neutral reading becomes visible.

[18]However, the fact that non-PI-ed bare singulars cannot refer to kinds pre-verbally without the definite article, differently from bare plurals, remains as a problem to be explored. This is similar to Turkish singular kind terms. They cannot receive case-marking when they are PI-ed, though it is obligatory for them when they are not PI-ed.

Turkish, the modification of pre-verbal bare singulars is only allowed if the combination yields a prototypical theme for the event denoted by the verb. Otherwise, they require the indefinite or plural form, as exemplified below.[19]

(41)   a.   jerp senjag-ə məd-a,   John-ə   hin/hin͡tsadz kirk *(-er/mə)
                 when room-DEF enter-PAST1SG John-DEF old/aged   book PL/INDEF
                 gə-gart-ar-gor
                 INDC-read-IMPERF3SG-PROG
                 'When I entered the room, John was reading an old/worn-out book/books.'

        b.   jerp senjag-ə məd-a,   John-ə   gəronagan/badmutjan kirk
                 when room-DEF enter-PAST1SG John-DEF religious/history.GEN   book
                 gə-gart-ar-gor
                 INDC-read-IMPERF3SG-PROG
                 'When I entered the room, John was doing religious/history book-reading.'

I claim that PI in WA happens with singular kind terms instead of atomic properties of ordinary individuals, and the modification of PI-ed bare singulars happens in the taxonomic domain, complying with the restrictions given above.

I pursue this view since PI in WA patterns with PI in Turkish in terms of the number interpretation in telic contexts and in their compatibility with verbs like *compare*. Recall that Hindi PI-ed bare singulars yield a number neutral interpretation only in atelic contexts, and Hungarian PI-ed bare singulars are incompatible with *compare, reconcile, unite*, etc. Dayal (2011, 2015) takes these as a sign for the atomic property denotation of PI-ed bare singulars. However, we have seen that Turkish PI-ed bare singulars can independently yield a number neutral interpretation in both telic and atelic contexts, as well as being compatible with the verbs like *compare*. I have claimed that they are singular kind terms in this construction and the number neutrality stems from the establishment of the *belong-to* relation encoded in the construction.

Below are the examples showing that this also holds for PI in WA. For (42a), imagine a context where as a bunch of friends, we want to play football, but we need more people to

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[19]For one of the speakers from Beirut, the bare adjective+noun combination occurring without *-er/mə* is weird regardless of the modification type.

form two teams. John disappears saying that he will solve this problem. Then, half an hour later he comes back with 10 more people. We get surprised because we were not even sure that he could find a single person.

(42)　　a.　John-ə　　mart kəd-av/　　　havak-ets　　　ges jam-u　　metS
　　　　　　　John-DEF man found-3SGPAST gather-3SGPAST half hour-GEN in
　　　　　　　'John found/gathered men in half an hour.'

　　　　b.　hant͡snaʒoɣov-ə teknad͡zu bidi paxtade　　　　　kal ams-əvan
　　　　　　　committee-DEF candidate will compare.3SGPRES next month-GEN
　　　　　　　mərt͡sum-i-n hamar
　　　　　　　contest-DAT for
　　　　　　　'The committee will compare candidates for the next month's contest.'

So, pre-verbal bare singulars in WA undergo PI and this explains their number neutral interpretation and narrow scope behavior.

In addition, as in Turkish, bare singulars can also appear in the predicate position in WA and be predicated of plural subjects, as well as singular subjects. However, complying with the facts of Turkish, predication with plural subjects is restricted to unmodified bare singulars or the ones that receive taxonomic modification, as shown in (43).[20] This phenomenon can also be identified as *kind specification* as in Turkish, where the kind that the subject term belongs to is specified by a singular kind term appearing in the copular/predicate position. This confirms the claim that the seemingly 'number neutral' bare singulars are singular kind terms in WA, just as in Turkish.

(43)　　a.　menk pəʒiʃg(-ner) enk
　　　　　　　we　 doctor-PL　 are.3PL
　　　　　　　'We are doctors.'

　　　　b.　menk keɣet͡sig pəʒiʃg*(-ner) enk
　　　　　　　we　 pretty　 doctor-PL　 be.3PL
　　　　　　　'We are pretty doctors.'

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[20]For (43d), I have encountered variation. The most natural way is to use the plural form *kirk-er*, so one consultant from Istanbul did not like (43d). However, it has been judged to be acceptable, though not perfect, by the other consultants. I would also like to point out that the consultants had difficulty overall in judging sentences in (43) with a conjoined plural subject, therefore, I have used plural pronouns instead.

    c.   menk sird-i   pəʒiʃg-(ner) enk
         we   heart-GEN doctor-PL   are.3PL
         'We are heart doctors.'

    d.   asong gəronagan kirk?(-er) en
         these religious   book-PL   be.3PL
         'These are religious books.' (referring to the Bible and Qoran)

Furthermore, the contrast between singular and plural kind terms with respect to naming kinds observed in Turkish also holds in WA. Namely, as in Turkish, the kind-level predicate *horin-* 'invent' is only compatible with singular kind terms, not plural ones, as exemplified below. This shows that only the former can be names of kinds.[21]

(44)   kompjutor(*-ner)-ə horin-v-etsav   Charles Babbage-i-n
       computer-PL-DEF   invent-PASS-PAST.3SG Charles Babbage-GEN-DEF
       goɣm-e-n
       side-ABL-DEF
       'The computer was invented by Charles Babbage.'

To conclude, I claim that singular nouns denote atomic properties and plural nouns denote number neutral properties in WA, as in Turkish and English.

5.3   The Semantics of Number Marking in Persian

Persian bare nouns are also strikingly similar to Turkish bare nouns. Persian, like Turkish, lacks an overt definite determiner, therefore definiteness is ensured by *iota* type-shifting. However, differently from Turkish, Persian also has a uniqueness marker *-(h)e/a*. It only optionally appears on singular nouns in definite contexts but it can also co-occur with indefinites formed with *ye* 'one' to yield specific indefinite interpretations (Jasbi 2016, 2019b).[22]

Since Persian lacks an overt definite article, singular and plural kind reference is achieved by bare nouns, as shown in (45), which can also occur in generic contexts, as shown in

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[21]See Section 5.3 of Chapter 2 for relevant discussion. As in Turkish, the plural form is acceptable under a taxonomic interpretation, referring to different types of computers.

[22]I discuss the semantics of the uniqueness marker of Persian in Section 8.2 of the next chapter.

(46) (see also Gomeshi 2016). The uniqueness marker, though, does not take part in kind reference, being only compatible with object level contexts, as is clear in (45b) and (46b).

(45)   a.   Xers-hā dar āsiya takāmol peydā kard-an.
                bear-PL in   Asia evolve-3PL
                'Bears evolved in Asia.'

        b.   Xers(*-e) dar āsiya takāmol peydā kard.
                bear-UM in Asia evolve-3SG
                'The bear evolved in Asia.'

(46)   a.   Xers-hā ma'mulan heyvān-āt-e khashen-i   hast-and.
                bear-PL usually   animal-PL-EZ aggressive-INDEF be.3PL
                'Bears are usually aggressive animals.'

        b.   Xers(*-e) ma'mulan heyvān-e khashen-i-ye/-ist.
                bear-UM usually   animal-EZ aggressive-INDEF-be.3SG
                'The bear is usually an aggressive animal.'

As in Turkish and WA, the difference between these two forms of kind reference is revealed by the distributivity test, which is exemplified in (47).

(47)   a.   Gorbe-hā ma'mulan yek diger-o   tamiz mi-kon-and.
                cat-PL   usually   each.other-OM clean IMPERF-do-3PL
                'Cats usually clean each other.'

        b. *Gorbe ma'mulan yek diger-o   tamiz mi-kon-e.
                cat   usually   each.other-OM clean IMPERF-do-3SG
                Intended: 'Cats usually clean each other.'

Bare plurals can also be used as number neutral narrow scope existentials in Persian, as shown in (48a), which is evidenced by their interaction with negation, as in (48b). The number neutrality is also visible in other downward entailing contexts and questions, as shown in (49) and (50).

(48)   a.   In   ruz-hā gorbe-hā bāgh-e-man-ro   xarāb mi-kon-an.
                this day-PL cat-PL   garden-EZ-my-OM ruin IMPERF-do-3PL
                'These days, cats are ruining my garden.'

b. In   ruz-h*ā* gorbe-h*ā* be b*ā*gh-e-man   ne-mi*ā*y-and.
this day-PL cat-PL   to garden-EZ-my NEG-IMPERF.come-3PL
'These days, cats are not coming to my garden.' (no cats, #some > not)

(49) Age mard-h*ā* be to   xiy*ā*nat kard-an, mituni   be goruhe m*ā* be-peyvand-i.
if   man-PL   to you betray.PAST-3PL can.2SG to group   our IMP-join-2SG
'If men have betrayed you, you can join our group.' (one or more men)

Context: We go to the forest for hiking and see one bear there. When we come home our friend asks whether we have come across bears.

(50) Unj*ā* b*ā*   xers-h*ā* mov*ā*je shod-in?
there with bear-PL come.across.PAST-2PL
'Did you come across bears there?'

a. *Ā*re, b*ā*   ye   xers mov*ā*jeh shod-im.
yes   with one bear come.across.PAST-1PL
'Yes, we came across one bear.'

b. #Na, b*ā*   ye   xers mov*ā*jeh shod-im.
no   with one bear come.across.PAST-1PL
'No, we came across one bear.'

On the other hand, bare singulars are only interpreted as singular definites, unless they occupy the immediately pre-verbal position where they receive a number neutral narrow scope interpretation. These are exemplified in (51) and (52).

(51) a. In   ruz-h*ā* gorbe?(-he) b*ā*gh-e-man-ro   xar*ā*b mi-kon-e.
this day-PL cat-UM   garden-EZ-my-OM ruin   IMPERF-do-3SG
'These days, the cat is ruining my garden.'

b. In   ruz-h*ā* gorbe?(-he) be b*ā*gh-e-man-ro   ne-mi*ā*d.
this day-PL cat-UM   to garden-EZ-my-OM NEG-IMPERF.come.3SG
'These days, the cat is not coming to my garden.'

(52) Emruz Hooman ketab khund.
today Hooman book read.PAST.3SG
'Today, Hooman did book-reading.'

The fact that bare plurals can freely receive narrow scope existential readings as opposed to bare singulars is not surprising. We have already seen that this contrast follows from the distinction between singular and plural kind reference.

As for pre-verbal bare singulars, Krifka and Modarresi (2016) analyze them as instances of pseudo-incorporation. Similar to the view pursued here, they argue that bare nouns are dependent definites with respect to the event, on a par with English weak definites. They explain the number neutrality by the local existential closure that applies to the event variable at the level of vP (cf. Dabir-Moghaddam 1997, Megerdoomian 2012, Modarresi 2015, among others). Instead, I argue that PI in Persian occurs with singular kind terms, as is the case with Turkish and WA. The modification facts, the number neutral interpretation in telic contexts, and the compatibility with verbs like *compare* indicate its similarity to PI occurring in these languages.

To begin with, in (53), I present two examples, one with an object level modification and the other with a taxonomic level modification. The consultants judge (53a) to be odd without the indefinite marker *ye* (or the plural marker *-hā* on the noun), and they judge (53b) to be good.[23]

(53)   a.   Emruz Hooman ??(ye) ketab-e kohne khund.
            today Hooman a   book-EZ old   read.PAST.3SG
            'Today Hooman read an old (worn-out) book.'

    b.   Emruz Hooman ketab-e elmi   khund.
            today   Hooman book-EZ scientific read.PAST.3SG
            'Today Hooman did scientific book-reading.'

Second, in (54), I exemplify the Persian counterpart of (42a) above showing that PI-ed bare singulars denote a number neutral interpretation in telic aspect. Finally, (55) shows that Persian PI is possible with the verb *compare*.

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[23]For two speakers, both sentences are odd if they are not accompanied by *ye* and *-hā*. Crucially, though, I have also been informed that even if they are uttered without *ye*, they can only yield a singular interpretation, not plural.

(54)   John tu nim saat ādam peydā kard/   jam kard.
                 John in half hour man   find.PAST.3SG gather.PAST.3SG
                 'John found/gathered men in half an hour.'

(55)   Komiteh   doreh ham jam mish-an   ke   sherkatkonandeh
                 committee together   gather.PAST-3PL that candidate
                 moghāyeseh kon-an.
                 compare-3PL
                 'The committee gathered to compare candidates.'

Additionally, again as in Turkish and WA, Persian bare singulars can also occur in the predicate position, being compatible with a plural subject, which is exemplified in (56a). The predicate position also provides a very clear contrast between the object-level and taxonomic-level modification.[24] In other words, as is evident in (56b), when the bare singular *doktor* is modified by *khoshtipi* 'handsome', which is an object-level modifier, the plural subject is only possible if the noun is inflected by the plural marker *-hā* (see also Gomeshi 2003). In contrast, if *doktor* is modified by *umumi* 'general/primary', which is a taxonomic level modifier, then the plural subject is possible, as shown in (56c). In fact, the addition of the plural marker on the noun here, as well as in (56a), yields a definite equative reading, as in Turkish. I therefore argue that as in Turkish and WA, the fact that bare singulars can be predicated of plural subjects is made possible by *kind specification*.

(56)   a.   Amir o   Hooman doktor(-hā) an.
                 Amir and Hooman doctor-PL   be.3PL
                 without pl: 'Amir and Hooman are doctors.'

                 with pl: Amir and Hooman are the doctors.'

        b.   Amir o   Hooman doktor*(-hā)-(y)e khoshtipi   an.
                 Amir and Hooman doctor-PL-EZ   handsome be.3PL
                 'Amir and Hooman are (the) handsome doctors.'

        c.   Amir o   Hooman doktor(-hā)-(y)e umumi an.
                 Amir and Hooman doctor-PL-EZ   general be.3PL
                 without pl: 'Amir and Hooman are primary doctors.'

                 with pl: Amir and Hooman are the primary doctors.'

---

[24]The two speakers who do not like (53) have clear judgments for (56), showing a contrast between object and taxonomic level modification.

Finally, as in Turkish and WA, the verb *exterā kardan* 'invent' is only compatible with singular kind terms, not plural ones, as exemplified in (57). This means that singular and plural kind reference contrast with each other in naming kinds in Persian, too.

(57)   Komputer(*-hā) tavasote Charles Babbage exterā shod.
        computer-PL   by   Charles Babbage invent be.PAST.3SG
        'The computer was invented by Charles Babbage.'

In conclusion, there are striking similarities among bare nouns of the three languages, which can be traced to the power of language contact. Therefore, analyzing the apparently number neutral bare singulars of Persian as singular kind terms in parallel to Turkish and WA bare singulars seems to be on the right track. The fact that the language makes a distinction between singular and plural kind reference, as well as the contrast observed in pseudo-incorporation and the predicate position indicate that bare singulars of Persian must be semantically singular (see also Modarresi 2014 and Gomeshi 2016).

5.4   Western Armenian and Persian Numeral Constructions and Classifiers

We have seen that both WA and Persian bare singulars denote atomic properties of ordinary or taxonomic entities, the latter resulting in impure atomic singular kind reference. Based on that, I argue that the classifiers of the two languages cannot have an atomizer role when they combine with singular nouns, as in Turkish.[25] Instead, I analyze them analogous to their kin in Turkish, i.e., *tane,* in being the overt realization of the cardinality measure function which requires to combine with an atomic property (cf. Sigler 1996, Borer 2005, Bale and Khanjian 2008, 2014, Khanjian 2013 for WA, and Gomeshi 2003, Gebhardt 2009 for Persian).

(58) $[\![tane/had/t\bar{a}]\!] = \lambda n \lambda P_{AT} \lambda x. \exists S\ [\prod(S)(x) \wedge |S| = n \wedge \forall s \in S\ P(s)]$

---

[25]Additionally, both WA *had* and Persian *tā* are incompatible with mass nouns.

I also maintain this view for the cases where they combine with plural nouns and suggest that the plural inflection in NCs reflects agreement as in English plurals in NCs, but further conditioned by specificity in WA and definiteness in Persian (cf. Sigler 1996, Borer 2005, Bale and Khanjian 2008, 2014, Khanjian 2013, Martí 2019 for WA, and Gomeshi 2003, Gebhardt 2009 for Persian).

Our sample size is too small to draw definitive conclusions but to the extent that they are representative of a wider group we can say the following: The plural agreement marker is insensitive to the presence/absence of the classifier in Beirut WA, and can preferably be omitted in Istanbul WA, which I believe might be the influence of Turkish. In addition, it only occurs in NCs with the classifier in Persian. However, as we will see in the next chapter, in Persian, the plural inflection is not the only way of making NCs with the classifier definite. Namely, although the plural marking is conditioned by definiteness, it is not obligatorily realized when the NC is definite. Given these various factors, it is hard to analyze the plural inflection on NCs of WA and Persian as the reflection of genuine plurality.

In fact, Turkish has an extremely limited version of this phenomenon, which is only possible with well-known characters, like *the seven dwarfs* and *the three musketeers*, as shown in (59).[26]

(59)　　a.　yedi　(*tane) cüce-ler
　　　　　　　seven CL　　dwarf-PL
　　　　　　　'the seven dwarfs'

　　　　　b.　üç　　(*tane) silahşör-ler
　　　　　　　three CL　　musketeer-PL
　　　　　　　'the three musketeers'

However, differently from WA and Persian, the plural marking is incompatible with *tane*. This may be because NCs with *tane* do not yield definite interpretations to begin with, as will be shown in the following chapter.

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[26]Although this seems to be restricted to some fictional characters, I have encountered evidence that it still has some productivity. Once there was a reality show called ***üç adam*** 'the three men' in Turkey, and I have heard my mom telling me 'Ben şimdi ***üç adam-lar****-ı* izleyeceğim.' 'I will now watch *the three men*.'

This brings us to the question what determines whether an NC with the classifier can be definite/specific or not. We will see that spelling out the cardinal head overtly is not simply an optional choice, but instead comes at a cost. More precisely, its presence creates semantic differences in a restrictive way. While NCs without *tane* can be both definite and indefinite, the presence of *tane* limits NCs to indefinite readings only, making the optional status of the classifier controversial. We will see that WA and Persian classifiers also reveal differences in interpretation, though in some other aspects.

6   Conclusion

This chapter has analyzed the semantics of NCs and the optional numeral classifier, i.e., *tane*, and has further extended the investigation to the semantics of number marking and NCs in Western Armenian and Persian. The discussion has centered around two main issues: One concerns what is implied by Turkish having an optional classifier in its NCs in contrast to English; the other concerns what kind of status the Turkish optional classifier system has with respect to obligatory classifiers of languages like Chinese.

The main claim of this chapter is the following: Cardinal numerals are universally formed on the basis of a cardinal head that denotes the cardinality measure function of type $\langle n, \langle \langle e, t \rangle, \langle e, t \rangle \rangle \rangle$ (Scontras, 2014). It takes a number and a noun denoting an atomic property and returns a set of individuals of the relevant cardinality, the atomic parts of which hold the property denoted by the noun (Ionin and Matushansky 2006, 2019). The *-s* marking on the noun in English NCs is not the genuine plural marker, but instead realizes number agreement. Differing from English, the covert cardinal head has also an overt counterpart in Turkish, and it is realized by the numeral classifier *tane*. This further contrasts with obligatory classifiers of Chinese-like languages, which have an atomizing function on kind denoting nouns to make them available for counting.

The difference in the form of the noun and the presence of an optional classifier in Turkish NCs, in contrast to English NCs, do not suggest variation in the number marking systems of the two languages. Similarly, the fact that Turkish has a numeral classifier does not mean

that its nominal semantics should be similar to the one in obligatory classifier languages. In fact, as illustrated above, they fundamentally differ from each other both in the semantics of number marking and numeral classifiers.

Finally, the investigation of the semantics of number marking in Western Armenian and Persian has further shown that Turkish is not alone in this respect. Both languages are significantly similar to Turkish in their nominal semantics. This not only confirms the claims made in this dissertation regarding the nature of kind reference and the phenomena revolving around it, but also sheds light on the nature of optional classifiers in general.

In the following chapter, I will extend the analysis to a different aspect of optional classifiers. Namely, we will investigate to what extent optional classifiers truly represent optionality in counting.

5

ON THE NON-OPTIONALITY OF OPTIONAL CLASSIFIERS

1 Introduction

The previous chapter has analyzed the semantics of NCs and optional classifiers and concluded that NCs are formed on the basis a cardinal head. Crucially, we have established that the cardinal head has an overt counterpart in languages like Turkish, WA, and Persian, and it is realized by the so-called optional numeral classifiers of these languages. Here, I explore these elements from a different angle. Despite its seemingly optional status, we will see that the overt realization of the cardinal head is not a random choice in these languages, but comes with restrictions on interpretation. Therefore, optional classifiers have a non-optional status in this respect.

Specifically, the presence of *tane* limits NCs to indefinite interpretations only while the form without *tane* is free in having definite and indefinite interpretations. Additionally, the two forms of NCs vary in terms of their interaction with the additive/distributive particle, i.e., *dA*. Building on Szabolcsi's (2015) analysis of *mo*, the Japanese kin of *dA*, this will be shown to stem from the indefiniteness associated with *tane*.

I propose that the overt cardinal head *tane* comes with a built-in choice function variable in the sense of Reinhart (1997) when NCs with it occur in argument positions. This is what ensures their indefinite interpretation. In contrast, NCs bearing the covert cardinal head are freely associated with *iota*-type shifting or a choice function variable. We will further discuss two cases where despite the restriction to indefiniteness, NCs with *tane* can be interpreted as definite. These cases emerge when they are modified with outer relative clauses, and when they occur in a special partitive construction. I show that accounting for these two cases is possible without compromising the indefiniteness of *tane*.

Crucially, the analysis offered distinguishes between two types of relative clauses in Turkish, outer relative clauses situated outside of DP/NC, and inner relative clauses situated pre-nominally inside DP/NC. The upshot of the analysis is that relative clauses can be nominalized, which can only be situated outside of DP/NC, and they can combine with an expression of type e (i.e., an NC with *tane* bearing the choice function), resulting in a definite expression. I further extend this reasoning to the special partitive construction.

While the investigation centers around *tane* substantially, it also extends to WA *had* and Persian *tā* at the end of the chapter. I show that the presence of the classifier creates meaning differences in these languages, as well, but the form with the classifier can receive definite interpretations in both languages, in contrast to Turkish. Hence, whether NCs with or without the classifier can be definite or not is regulated by language internal properties and the indefiniteness associated with *tane* is by no means an absolute necessity of the optional classifier system. Nevertheless, the interpretational differences created by the presence of the classifier in these languages clearly indicate that realizing the cardinal head overtly is not entirely an optional process.

The outline of the chapter is as follows: Section 2 discusses the differences between NCs with and without *tane* outlining the issues of (in)definiteness. Section 3 proposes that *tane* comes with a built-in choice function variable in argument positions. Section 4 analyzes the interaction of NCs with the particle *dA*. Section 5 introduces and analyzes the cases where NCs with *tane* can receive definite readings. Section 6 discusses an alternative approach to

the indefiniteness of NCs with *tane* and eliminates it. Section 7 expands on two more issues that have a bearing on my claims regarding *tane*. It provides more discussion on its syntax and examines its behavior emerging out of its combination with the numeral *bir* 'one'. Section 8 examines the optional classifiers of WA and Persian in more detail, addressing the issue of (in)definiteness of NCs with and without the classifier. Section 9 concludes.

2 Differences between NCs with and without *tane*

In this section, I present the main differences between NCs with and without *tane*. In Section 2.1, I show that both forms can be indefinites, and in Section 2.2, I show that only NCs without *tane* can get definite interpretations.

2.1 Indefiniteness of Numeral Constructions

In this section, I aim at showing that NCs regardless of the presence or absence of *tane* have indefinite readings. Being indefinites, they show long-distance scope and island-escaping ability. For the sake of completeness, I will first briefly survey the general scope taking mechanism in Turkish, as discussed in the literature.

2.1.1 Scope rigidity and indefinites in Turkish

Throughout the literature Turkish has been shown to be a scope rigid language, where scope relations reflect the surface order of the quantifiers (Zidani-Eroğlu 1997, Göksel 1997, Aygen-Tosun 1999, Kelepir 2001, among others). Kelepir illustrates the scope rigidity in Turkish by the following example (pg. 57):

(1)   a.   Bir öğrenci her   kitab-ı   oku-du.
           one student every book-ACC read-PAST
           'A student read every book.'

      b. $\exists y \ [student(y) \ \wedge \forall x \ [book(x) \rightarrow read(y, x)]]$ (**a** > **every**)

In contrast to its English counterpart, the sentence in (1a) is only felicitous in a situation where each book at issue was read by the same single student, reflecting the wide scope interpretation of the indefinite. To be able to get a narrow scope interpretation for the indefinite, the universal quantifier needs to be fronted, resulting in a different word order, as exemplified below:

(2) a. Her kitab-ı   bir öğrenci oku-du.
         every book-ACC one student read-PAST
         'A student read every book.'

     b. $\forall x \; [book(x) \; \rightarrow \; \exists y \; [student(y) \; \wedge \; read(y, x)]]$ (**every** > **a**)

When the object is an indefinite, its scopal interaction with a preceding quantificational element depends on whether the object carries case-marking on it or not. If it does not carry overt case marking, it always takes narrow scope. If it is accompanied by overt case-marking, then the scope rigidity can be violated, and the indefinite can take wide scope. Below, I exemplify a caseless indefinite object (3a), an accusative case-marked indefinite object (4a), and a dative case-marked indefinite object (5a), interacting with a universal quantifier subject (Kelepir 2001, pg. 59).

(3) a. Her öğrenci bir kitap oku-du.
         every student one book read-PAST
         'Every student read a book.'

     b. $\forall y \; [student(y) \; \rightarrow \; \exists x \; [book(x) \; \wedge \; read(y, x)]]$ (**every** > **a**)

(4) a. Her öğrenci bir kitab-ı   oku-du.
         every student one book-ACC read-PAST
         'Every student read a book.'

     b. $\forall y \; [student(y) \; \rightarrow \; \exists x \; [x \in X \; \wedge \; read(y, x)]]$,

         where X is a contextually salient set of books. (**every** > **a**)

     c. $\exists x \; [book(x) \; \wedge \forall y \; [student(y) \rightarrow read(y, x)]]$ (**a** > **every**)

(5)   a.   Her   öğrenci bir kitab-a   yorum   yaz-dı.
              every student one book-DAT comment write-PAST
              'Every student wrote comments on a book.'

       b. $\forall y\ [student(y)\ \rightarrow\ \exists x\ [book(x)\ \wedge\ comment(y,x)]]$ (**every** > **a**)

       c. $\forall y\ [student(y)\ \rightarrow\ \exists x\ [x \in X\ \wedge\ comment(y,x)]],$

             where X is a contextually salient set of books. (**every** > **a**)

       d. $\exists x\ [book(x)\ \wedge \forall y\ [student(y) \rightarrow comment(y,x)]]$ (**a** > **every**)

(3a) is felicitous in a context where every student read possibly different books, reflecting the narrow scope interpretation of the indefinite.

(4a) is felicitous in two different contexts. The first one is such that every student read a (possibly different) book from a given list of books X. The second one is such that there is a specific book and everyone read that book. In this example the scope rigidity is violated because although the indefinite is preceded by the universal quantifier, it can receive a wide scope specific interpretation, as is evident from its second meaning. However, in the case of the first meaning, the indefinite still gains a specific interpretation, revealing itself as a covert partitive (as suggested by Enç 1991). This means that for covert partitive specificity, the indefinite does not need to be interpreted as taking wide scope.

Finally, (5a) can be felicitous in three different contexts. The first two are such that every student commented on a possibly different book, which could be any book, or a book from a given set of books X. The former represents the non-specific narrow scope reading, whereas the latter represents the specific narrow scope reading. The third one is such that there is a specific book and every student commented on that.

The narrow and wide scope readings are represented in Figure 5.1. Depending on whether the books are from a pre-determined set of books X or not, **every** > **a** represents both specific and non-specific narrow scope readings.

John	⟶	bk1		John	bk1
Mary	⟶	bk2		Mary	bk2
Carol	⟶	bk3		Carol	bk3
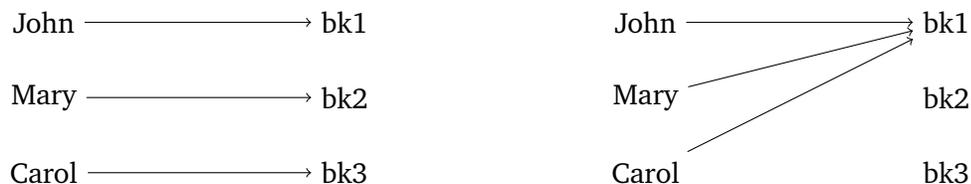
Figure 5.1: A representative context for **every** > **a** and **a** > **every**

What this contrast shows us is that an indefinite carrying a case-marking on it other than the accusative case behaves like indefinites in English, in freely allowing both specific and non-specific interpretations. However, the question is what kind of a mechanism is responsible for the contrast created by different case-marking options.

Indefinites differ from quantificational elements in that they have unusual scope behavior, with the ability to be interpreted with wide scope in unexpected contexts (Fodor and Sag, 1982). For example, universal quantifiers can take wide scope over a preceding indefinite, but they cannot scope out of islands such as complex noun phrases and the antecedent of conditionals, as exemplified below (Reinhart 1997, pg. 336).

(6)   a.   A doctor will interview every new patient.

       b.   A doctor will examine the possibility that we give every new patient a tranquil-
             izer.

While (6a) can receive an interpretation such that for every new patient there will be a possibly different doctor interviewing them, (6b) can only be felicitous if a particular doctor is responsible for examining the possibility that every new patient is given a tranquilizer.

Similarly, universal quantifiers cannot take scope out of the antecedent of conditionals. This is shown in (7), which cannot mean that for every friend of mine from Texas it is the case that if they died in the fire, I would have inherited a fortune. Instead, for me to be able to inherit a fortune, all friends of mine would have to die (Fodor and Sag 1982, pg. 370).

(7)   If every friend of mine from Texas died in the fire, I would have inherited a fortune.

Indefinites contrast with universal quantifiers in their exceptional ability to take scope out of islands, as shown in (8). (8a) can mean that there is a new patient such that every doctor will examine the possibility that we give him/her a tranquilizer. Similarly, (8b) can mean that there is a friend of mine from Texas and if he/she died in the fire, I would have inherited a fortune (Fodor and Sag 1982, pg. 369). This also holds for Turkish indefinites, and the corresponding examples are given in (9).

(8) a. Every doctor will examine the possibility that we give a new patient a tranquilizer.

   b. If a friend of mine from Texas died in the fire, I would have inherited a fortune.

(9) a. Her   doktor bir hasta-ya   sakinleştirici ver-il-me-si
        every doctor one patient-DAT tranquilizer give-PASS-INF-3SGPOSS
        olasılığ-ı-nı   düşün-ecek.
        possibility-3SGPOSS-ACC think-FUT
        'Every doctor will think about the possibility of a tranquilizer being given to a

        patient.'

   b. Eğer Texas-tan bir arkadaş-ım   yangın-da öl-se-y-di,   bir
        if   Texas-ABL one friend-1SGPOSS fire-LOC   die-COND-COP-PAST one
        servet-e   kon-acak-tı-m.
        fortune-DAT inherit-FUT-PAST-1SG
        'If a friend of mine from Texas died in the fire, I would have inherited a fortune.'

In order to explain this exceptional behavior of indefinites, Fodor and Sag (1982) argue that indefinites are ambiguous in being quantificational and referential, and the specific interpretation of indefinites corresponds to their referential interpretation. However, this view only predicts a widest scope or narrowest scope reading for indefinites. On the other hand, there are cases where indefinites take intermediate scope, as in (10) (Ruys 1992, Abusch 1993, Farkas 1981). Similarly, Turkish indefinites also show this general behavior, as represented in (11).

(10) a. Every professor$_i$ will be fired if a student of his$_i$ in the syntax class cheats on the exam.

    b.   [For every professor x [there is some student y of x in the syntax class such that [if y cheats in the exam, x will be fired]]] (**every** $>$ **a** $>$ **if**)

(11)   Her   profesör$_i$, eğer bir öğrenci-si$_i$ sınav-da kopya çek-er-se, iş-ten
        every profesor if   one student-3SGPOSS exam-LOC cheat-AOR-COND work-ABL
        kov-ul-acak.
        fire-PASS-FUT
        'Every professor will be fired if a student of his cheats on the exam.'

Reinhart (1997) advocates a choice function theory for indefinites (cf. Winter 1997 and Kratzer 1998). In this theory, indefiniteness is ensured by a choice function variable (f) applying to a non-empty set to yield a member of that set, which is eventually existentially closed. It is also assumed that the existential closure of the choice function variable can apply at any compositional level. This explains the exceptional scope ability of indefinites without a need for a mechanism that would extract the indefinite from an island. In other words, there is no island constraint violation in the choice function analysis. Since the existential closure can apply at any compositional level, the intermediate scope readings are also accounted for. To see how it works, consider the example in (12) and in its interpretations represented in (13) (Reinhart 1997, pg. 373 & 374). The intermediate scope received in (10) is given in (14).

(12)   If we invite a philosopher, Max will be offended.

(13)   a.   Narrow Scope Reading:

        $[\exists f\ [CH(f) \wedge we\ invite(f(philosopher))] \rightarrow \mathit{offended}(Max)]$

        Max will be offended if there is a choice function and we invite the philosopher that it selects.

    b.   Wide Scope Reading:

        $\exists f\ [CH(f) \wedge [we\ invite(f(philosopher))] \rightarrow \mathit{offended}(Max)]$

        There is a choice function such that if we invite the philosopher that it selects, Max will be offended.

(14)   Intermediate Scope Reading of (10):

$$\forall x \; [professor(x) \rightarrow \exists f \; [CH(f) \wedge [cheat(f(student \; of \; x))] \rightarrow be.fired(x)]]$$

For every professor there is a choice function such that if the student of his that it selects cheats, he will be fired.

Following Reinhart (1997), Kelepir (2001) argues that the wide scope interpretations of case-marked indefinites are not violations of scope rigidity but are instead a result of the choice-function mechanism. She further claims that accusative indefinites always carry a presupposition of existence contra Fodor and Sag (1982). This also contrasts with Enç (1991) where it is proposed that specificity equals covert partitives, requiring a previous discourse to which both the speaker and the hearer relate the denotation of the noun at issue. Kelepir shows that accusative case-marked indefinites do not need to be interpreted as covert partitives all the time and that they cannot be referential.

Here, I share Kelepir's views in that Reinhart's choice function theory not only explains the exceptional scope behavior of Turkish indefinites, but also accounts for the freedom of case-marked indefinites to interact scopally.[1] Kelepir's further claim about accusative case accounts for the fact that accusative case-marked indefinites always yield specific interpretations. Let us consider the details of Kelepir's claim.

The presupposition of existence triggered by the accusative case-marked indefinites is evidenced by their comparison with zero-marked indefinites, as shown in (15) below (Kelepir 2001, pg 69).

(15)   a. ?Sen bir hayalet-i gör-dün mü?
             you one ghost-ACC see-PAST QUEST
             'Did you see one of the ghosts.'

         b. Sen bir   hayalet gör-dün mü?
             you one ghost   see-PAST QUEST
             'Did you see a ghost?'

---

[1]Reinhart's choice function theory was later revised in Kratzer (1998) and Chierchia (2001). See also Schwarz (2001, 2004) where choice function analyses have been widely criticized.

In (15a), the existence of the ghosts is presupposed, but in (15b), it is not the case.

The fact that accusative indefinites are not always interpreted as covert partitives is shown by the example in (17) (Kelepir 2001, pg. 79-80).

(16)   Ahmet bugünlerde ne   yapı-yor?
        Ahmet nowadays   what do-PROG
        'What is Ahmet doing these days?'

(17)   a.   Bir çevirmen   arı-yor.
              one interpreter look.for-PROG
              'He is looking for an interpreter (de dicto).'

        b.   Bir çevirmen-i   arı-yor.
              one interpreter-ACC look.for-PROG
              'He is looking for an interpreter (de re).'

The sentence in (17a) has a zero-marked indefinite and is felicitous in a context where Ahmet needs a document to be translated and is looking for someone to translate it (de dicto). (17b) has an accusative indefinite and is felicitous in a context where there is a specific translator that Ahmet is looking for (de re). The de re interpretation achieved by the accusative indefinite is not necessarily a covert partitive. In other words, (17b) does not have to mean that Ahmet is looking for someone out of a given set of interpreters.

The fact that accusative indefinites cannot be referential is supported by the following example where it cannot take wide scope over negation when preceded by an NPI (Kelepir 2001, pg. 94). This example shows that the accusative indefinites cannot be referential since the referential reading is supposed to surface all the time without being affected by the other scope elements.

(18)   Kimse   bir arkadaşım-ı   davet et-me-di.
        anybody one my.friend-ACC invite-NEG-PAST
        'Nobody invited any friend of mine.' (**neg** > **a**)

        Not: 'A friend of mine is such that nobody invited him.' (**a** > **neg**)

Kelepir (2001), following Diesing (1992), Kennelly (1994), and Zidani-Eroğlu (1997), also argues that the obligatory narrow scope reading of caseless direct object indefinites is due to the fact that they are situated inside the VP, where they are locally existentially closed. This contrasts with case-marked arguments which are situated (or move) outside of the VP. Then, we can think of caseless indefinite objects as introducing a variable in the sense of Heim (1982), which for structural reasons undergo a local existential closure.

We are also aware of that this local existential closure does not apply to bare singulars of Turkish, making it controversial for the case of indefinites, as well. However, as will be clear from the discussion in this chapter, the nature of type-shifters applying in the nominal domain and the ones applying to numerical constructions differ from each other. Indefinites of Turkish are formed by the numeral *bir* 'one', and therefore they are also numerical expressions. In the case of bare nouns, I have followed Dayal's (2004b) Revised Meaning Preservation where ∃ type-shifting is ranked below *nom* and *iota* type-shifting, and therefore, it never applies to bare nouns. Only bare plurals can receive narrow scope existential readings through DKP, which introduces a local-existential closure. However, this is conditioned on the plural kind denotation of bare plurals. Since, bare singulars are singular kind terms which do not allow semantic access to object-level entities associated with them, DKP is unavailable for them, ruling out kind-based existential closure.[2]

On the other hand, we will see that for numerical expressions, the existential reading is freely available and in fact it is the only available one for NCs with *tane*. This shows that the rules regulating the type-shifting mechanism in the nominal domain are different from the ones for numerical expressions. So, accounting for the narrow scope interpretations of caseless indefinite objects with a local existential closure does not contradict the facts of bare nouns.

To summarize, Turkish is a scope rigid language, and despite this, case-marked indefinites are free in their scope taking ability, evidenced by their exceptional wide scope interpretation outside of islands. We have also seen that the degree of freedom is determined by what

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[2]Note that this generalization excludes PI-ed bare singulars. See Chapter 3 for the PI analysis.

kind of case-marking indefinites carry. In order to account for these facts, I follow Reinhart's (1997) choice function theory and Kelepir's (2001) claim that accusative-case-marked indefinites presuppose existence differently from indefinites with different case markers and those that do not carry any case-marker at all.

2.1.2 Numeral constructions, scope, and specificity

NCs with and without *tane* can behave like indefinites in having an island-escaping and intermediate scope ability and receiving specific interpretations. Since accusative case marking presupposes existence yielding specific readings all the time, and non-case marked indefinite objects always take narrow scope in Turkish, the indefinite behavior of NCs will be shown by other case markers.

Just like regular indefinites, NCs with and without *tane* in Turkish show scope ambiguity when they interact with other quantifiers, although it should be noted that the narrow scope interpretation of NCs with *tane* is more salient than their wide scope interpretation.[3]

(19)   Her   öğrenci iki   (tane) kitab-a   yorum   yaz-dı.
        every student two CL   book-DAT comment write-PAST
        'Every student wrote comments on two books.' (**every** > **two, two** > **every**)

This sentence can be true in three different contexts. The first one is such that every student wrote comments on two (possibly different) books, which represents the narrow scope non-specific reading. The second one is such that every student wrote comments on two (possibly different) books from a pre-determined set of books, reflecting the narrow scope partitive specific reading. Finally, the third one is that there are two specific books such that everybody wrote comments on them, which reflects the wide scope specific reading.

If NCs appear in the subject position only the wide scope specific reading is possible due to

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[3]Since in NCs with *tane* the cardinality information is made more salient by the overt realization of the cardinality measure function, the narrow scope (i.e., amount) reading is more readily available. Adding stress on the noun makes it easier for the wide scope reading.

scope rigidity in Turkish. It means that there are two specific students such that they read every book.

(20)   İki   (tane) çocuk her   kitab-ı   oku-du.
         two CL   child every book-ACC read-PAST
         'Two children read every book.' (**two** > **every**)

These facts also hold when NCs interact with intensional verbs and negation, as shown in (21) and (22). (21) can either mean that Ali needs any two doctors, or that Ali needs two specific doctors. The latter can either mean that it is not the case that Ali wrote comments on two books, but maybe three books, or that there are two specific books such that Ali did not write comments on them.

(21)   Ali-nin iki   (tane) doktor-a   ihtiyacı var.
         Ali-GEN two CL   doktor-DAT need   exist
         'Ali needs two doctors.' (**need** > **two, two** > **need**)

(22)   Ali iki   (tane) kitab-a   yorum   yaz-ma-di.
         Ali two CL   book-DAT comment write-NEG-PAST
         'Ali didn't write comments on two books.' (**neg** > **two, two** > **neg**)

Turkish NCs also show exceptional scope taking abilities, being interpreted either inside or outside of an island. For example, (23) can be felicitous in two contexts: The first one is such that it is enough that any two of my projects are selected for me to be able to receive funding. The other one, on the other hand, requires the condition that two specific projects of mine be selected.

(23)   Eğer iki   (tane) proje-m   seçil-ir-se,   ödenek
         if   two CL   project-1SGPOSS select-PASS-AOR-COND, funding
         al-abil-eceğ-im.
         take-ABIL-FUT-1SG
         'If two of my projects are selected, I will receive funding.' (**if** > **two, two** > **if**)

Finally, NCs can take intermediate scope besides the widest and narrowest scope readings. For example, (24) can mean that for every professor there are two specific students of his/her such that if they get A on the exam, he/she will be very happy.

(24)   Her   profesör$_i$ eğer iki (tane) öğrenci-si$_i$ sınav-dan A al-ır-sa   çok
            every professor if   two CL   student-3SGPOSS exam-ABL A get-AOR-COND very
            mutlu ol-acak.
            happy be-FUT
            'Every professor will be very happy if two students of his/her get A on the exam.'

So far, we have seen that NCs behave like regular indefinites in their scopal properties. They can also receive specific readings other than the ones induced by scopal interactions, such as partitive specificity and epistemic specificity (see Von Heusinger 2002 for an overview). The sentence in (25) exemplifies the use of NCs in partitive contexts and we see that both NCs with and without *tane* can be partitive specifics.

(25)   Oda-da   bir sürü çocuk var-dı.   İki (tane) çocuk kart oynu-yor-du.
            room-LOC one many child exist-PAST two CL   child card play-PROG-PAST
            Üç   (tane) çocuk televizyon izli-yor-du.
            three CL   child TV   watch-PROG-PAST
            'There were many children in the room. Two children were playing cards. Three children were watching TV.'

Epistemic specificity, on the other hand, expresses the speaker's knowledge about the referent of an indefinite. As shown in (26), both NCs can reflect epistemic specificity.

(26)   İki (tane) öğrenci sınav-da   kopya çek-ti. Kim ol-duk-ları-nı
            two CL   student exam-LOC cheat-PAST   who be-NMLZ-3PLPOSS-ACC
            bil-iyor-um.   Zeynep ve Merve.
            know-PROG-1SG Zeynep and Merve
            'Two students cheated on the exam. I know who they are: Zeynep and Merve.

To wrap up, NCs of Turkish are indefinites just like in any other language, and the absence/presence of the classifier does not change this fact. In the following section, however, we will see that in the absence of *tane*, NCs can be definite as well, but in the presence of *tane*, they cannot.

2.2 *Tane* and the Definiteness Problem

In Turkish, NCs without *tane* can be definite, evidenced by their anaphoric behavior, as shown in (27). However, NCs with *tane* cannot behave anaphorically (see also Schroeder 1992). The presence of *tane* forces a partitive specific reading or is understood as introducing new discourse elements, which yields infelicity in this particular context.[4]

(27)   a. İçeri iki (tane) öğretmen, bir (tane) doktor ve üç (tane) mühendis
           inside two CL teacher, one CL doctor and three CL engineer
           gir-di. **İki** (#tane) **öğretmen** benim-le konuş-mak iste-di.
           enter-PAST two CL teacher me-with speak-INF want-PAST
           'Two teachers, one doctor and three engineers entered inside. The two teachers wanted to talk to me.'

The lack of the definite reading with NCs with *tane* is also revealed in contexts of uniqueness or maximality. Imagine a context where Sevgi has two apples only. In this case, the NC with *tane* cannot refer to the maximal two apples that Sevgi has, whereas NCs without *tane* can, as shown in (28). On the other hand, if Sevgi has three apples, referring to two of them is possible with both NCs, as shown in (29). This means that while both NCs are compatible with partitive specificity, only NCs without *tane* yield definiteness.

Context: Sevgi has two apples only.

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[4] In (27) the best option for anaphoricity is to use the plural form *öğretmenler* 'the teachers', but the usage of the NC is still grammatical, especially if the antecedent does not immediately precede it. Otherwise, speakers judge against too much of repetition one after another and prefer to use the plural noun. However, in the presence of *tane*, the definiteness is completely bad.

(28) Sevgi-nin iki (#tane) elma-sı-nı   Merve-ye   ver-di-m.
      Sevgi-GEN two CL   apple-3SGPOSS-ACC Merve-DAT give-PAST-1SG
      'I gave Sevgi's two apples to Merve.'

Context: Sevgi has three apples.

(29) Sevgi-nin iki (tane) elma-sı-nı   Merve-ye   ver-di-m.
      Sevgi-GEN two CL   apple-3SGPOSS-ACC Merve-DAT give-PAST-1SG
      'I gave two of Sevgi's apples to Merve.'

One other diagnostic showing that NCs with *tane* are incompatible with definiteness comes from their occurrence with the particle *dA*. This particle has not received much attention in the literature but it has been described as a conjunction and discourse connective clitic with additive, adversative, continuative/topic-shifting and enumerating (henceforth distributive) functions in Göksel and Özsoy (2003) and Göksel and Kerslake (2005) (see also Kamali and Karvovskaya 2013). Its additive and distributive functions are the ones that concern us here. NCs without *tane* are compatible with both the distributive and additive role of *dA*, as shown in (30a). Interestingly, when *tane* is present, *dA* can only receive an additive interpretation, as shown in (30b) (see also Öztürk 2005).

(30) a. Dolapt-tan üç   (tane) elma çıkar-dı-m.   **Üç   elma da** masanın
          fridge-from three CL   apple take.out-PAST-1SG three apple DA table
          üstünde.
          on
          'I took out three apples from the fridge. The three apples **each** are on the

          table.'

          'I took out three apples from the fridge. Three **additional** apples are on the

          table.'

      b. Dolapt-tan üç   (tane) elma çıkar-dı-m.   **Üç   tane elma da**
          fridge-from three CL   apple take.out-PAST-1SG three CL   apple DA
          masanın üstünde.
          table   on
          'I took out three apples from the fridge. Three **additional** apples are on the

          table.'

The same facts also hold when NCs occur with predicates like *drank a bottle of milk* and *carried a piano upstairs*. Although such predicates are ambiguous in being distributive and collective in English, they receive only a collective reading in Turkish. Consider the examples in (31a), (31b), and (31c), the subjects of which are a plural noun, a plural pronoun, and a conjoined DP, respectively:[5]

(31) a. Çocuk-lar bir şişe   süt iç-ti.
          child-PL   one bottle milk drink-PAST
          'The children drank a bottle of milk.' (collective-one bottle)

      b. Biz bir şişe   süt iç-ti-k.
          we one bottle milk drink-PAST-1PL
          'We drank a bottle of milk.' (collective-one bottle)

      c. Ali ve Ayşe bir şişe   süt iç-ti.
          Ali and Ayşe one bottle milk drink-PAST
          'Ali and Ayę drank a bottle of milk.' (collective-one bottle)

These predicates are also interpreted collectively when their subjects are NCs. As is clear in (32), the non-distributivity of the predicates is insensitive to the presence/absence of the classifier in the NC. However, unlike NCs with *tane*, NCs without the classifier can receive a distributive interpretation when the particle *dA* cliticizes on them, as shown in (33).

(32) a. İki çocuk bir şişe   süt iç-ti.
          two child one bottle milk drink-PAST
          '(The) two children drank a bottle of milk.' (collective-one bottle)

      b. İki   tane çocuk bir şişe   süt iç-ti.
          two CL   child one bottle milk drink-PAST
          '(*The) two children drank a bottle of milk.' (collective-one bottle)

(33) a. İki çocuk **da** bir şişe   süt iç-ti.
          two child DA one bottle milk drink-PAST
          'The two children **each** drank a bottle of milk.' (distributive-two bottles)

          '(The) two children drank a bottle of milk, **too**.' (additive+collective-one bottle)

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[5]The same readings hold when the object is case-marked.

b. İki tane çocuk **da** bir şişe   süt iç-ti.
two CL   child DA one bottle milk drink-PAST
'(*The) two children drank a bottle of milk, **too**.' (additive+collective-one bottle)

The sentence in (33a) which has a NC without *tane* as its subject is ambiguous in having a distributive reading and a collective reading where *dA* contributes an *additive* interpretation. However, the sentence in (33b) which has a NC with *tane* has only the latter meaning. In other words, the distributivity function of *dA* is not evident in the presence of the classifier.

As is clear in both (30a) and (33a), the distributive reading of *dA* is accompanied by a definite interpretation of its host NC and in fact it is only possible if the NC is interpreted as definite. We will discuss the semantics of *dA* in Section 4, but for now it is sufficient to state that since NCs with *tane* cannot be definite, they are incompatible with the distributive function of *dA*.[6]

It should be noted that the disparity between NCs with and without *tane* in terms of definiteness cannot be reduced to the nature of quantizing nouns in general, which occupy a position between the numeral and the noun. Especially, quantizing nouns that have an atomizer role in NCs allow anaphoricity on a par with NCs without *tane*, which is further evidenced by their compatibility with *dA* in its distributive reading, as exemplified in (34).[7]

(34)   İki dilim kek **de** üç   lira.
two slice cake DA three lira
'The two slices of cake are three liras each.'

'In addition, the two slices of cake are 3 liras.'

Imagine (34) to be uttered by a cashier in the following contexts: (i) I am at Starbucks and want to buy one slice of cheesecake and one slice of banana cake. (ii) I am at Starbucks, I want to buy a cup of coffee and two slices of cake. In the first context, it is understood as

[6]Notice that NCs with *tane* are only incompatible with distributivity when *dA* cliticizes on them. Otherwise, they are compatible with inherently distributive predicates and reciprocals.
[7]NCs with measure terms like *kilo*, 'kilo' *litre*, 'liter', etc. can also receive anaphoric readings.

'the two slices of cake each are 3 liras, so they are 6 liras in total'. In the second context, (34) is only understood as 'in addition to the cup of coffee which is x liras, the two slices of cake cost 3 liras in total'.

In summary, NCs with *tane* are not compatible with definiteness as opposed to NCs without *tane*, while both types of NCs can yield indefinite readings. That being said, in the following section, I account for this disparity between the two forms of NCs based on Reinhart's (1997) choice function theory.

3   Associating *tane* with the Choice Function

In light of the analysis offered here for the semantics of the cardinal head, NCs have a predicative denotation to which the covert *iota* operator is expected to apply to yield definiteness. In Section 2.1, I have adopted Reinhart's (1997) choice function theory for indefinites. In this theory, indefiniteness is ensured by a choice function variable (f) applying to a non-empty set to yield a member of that set, which is eventually existentially closed.

Based on this, the ability of NCs without *tane* to have definite and indefinite interpretations is predicted. Namely, the predicative NCs either undergo *iota* type-shifting or are associated with a choice function variable, as represented in (35). Note that I represent *iota* under a syntactic node below for expository purposes.

(35)   NCs without *tane*
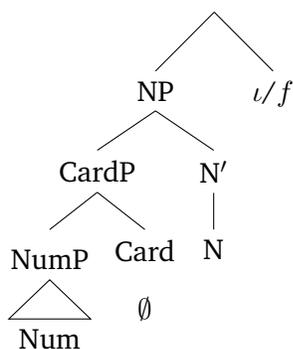
What changes in the presence of *tane*? Since they cannot be interpreted as definites, it must be the case that *iota* type-shifting is incompatible with them. To understand this case better, let us consider the following generalization.

It is a well-known fact that in every language NCs can freely occur in argument positions, receiving indefinite interpretations. This is even the case in languages that strictly disallow bare nouns in argument positions, like French (Chierchia 1998b). In languages like English and French, NCs can also be definite via their overt definite articles. Interestingly though, in bare NP languages regardless of whether they have an obligatory classifier system or not, NCs typically do not undergo *iota* type-shifting, but require demonstratives to yield definite readings.[8] Jiang (2012) bases this generalization on Chinese, an obligatory CL language, and Russian, a language without classifiers (see also Bošković 2005 for Russian).

Where does Turkish stand in this picture? It does not have an overt definite article, yet it has two strategies to represent its NCs, one with a classifier, one without a classifier. Given that NCs in all languages have indefinite denotations and NCs in bare NP languages typically have indefinite denotations only, what is more striking is the fact that NCs without *tane* can undergo *iota* type-shifting. So, it looks like Turkish is in between the two groups of languages in that regard, which I represent in Table 5.1 below.[9]

	Bare NP languages Indefinite NCs Definite NCs with Dem	Bare NP languages Indefinite NCs Definite NCs with *iota*		Languages with overt THE Indefinite NCs Definite NCs with THE
Obligatory CL	Chinese			
No CL	Russian			English
Optional CL		Turkish Indefinite: Num + (CL) + N Definite: Num + N	Persian Indefinite: Num + (CL) + N Definite: Num + (CL) + N NCs with CL need overt supporters	Western Armenian Indefinite: Num + (CL) + N Definite: Num + (CL) +N

Table 5.1: Cross-linguistic classification of the (in)definite status of NCs

The table also illustrates the facts of WA and Persian that will be discussed below. We will see that NCs with the classifier can be definites both via definite determiners (i.e., WA) and

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[8]In Bangla, the definiteness of NCs is achieved by the syntactic movement of the noun, which ends up preceding the numeral and classifier combination (Dayal 2014).

[9]The empty boxes of the table do not imply that there are no such languages that would go inside them. For example, Jiang (2012) argues that Yi and Bangla are obligatory classifier languages with an overt THE. Here, I only represent the languages that are relevant for the discussion in this chapter.

by *iota* type-shifting (i.e., Persian), showing that the indefiniteness associated with *tane* cannot be related to the optional classifier system.

Based on this, I assume that NCs without *tane* are like English NCs in having a predicative semantics which can feed into whatever comes above and become arguments. These could be covert elements like *iota* and the choice function, or overt elements like demonstratives and the universal quantifier. English NCs minimally differ from them in having the Blocking Principle at play, which rules out the application of *iota* due to the presence of overt *the*. On the other hand, on a par with NCs of bare NP languages, I suggest that NCs with *tane* have an argumental denotation with a built-in choice function variable. I further assume that the choice function variable is introduced by *tane* itself, which is eventually existentially closed.[10] This assumption will be crucial while accounting for the definiteness of NCs with *tane* in the special partitive construction in Section 5.2.[11]

In light of this, the semantics of *tane* is represented in (36) in a comparison with the covert cardinal head, and the structure of NCs occurring with it is represented in (37).

(36)   The Semantics of the Covert and Overt Cardinal Heads

    a. $[\![Card_\emptyset]\!] = \lambda n \lambda P_{AT} \lambda x. \ \exists S \ [\prod(S)(x) \wedge |S| = n \wedge \forall s \in S \ P(s)]$

    b. $[\![tane_f]\!] = \lambda n \lambda P_{AT}. \ f(\lambda x \ \exists S \ [\prod(S)(x) \wedge |S| = n \wedge \forall s \in S \ P(s)])$

(37)   NCs with *tane*

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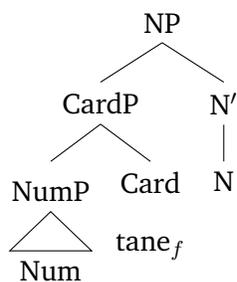
[10]Note that this is only for the case-marked argument positions. In the non-case marked direct object position, all indefinites introduce a variable that undergoes a local existential closure in the sense of Heim (1982).

[11]Jiang (2012) argues that the source of the choice function variable is numerals in every language. However, this does not explain the difference between NCs with and without *tane*.

Before concluding, I would like to point out that NCs with *tane* are like NCs in Chinese and Russian in having the following characteristics: Although *iota* is not available for them, they can combine with demonstratives and the universal quantifier *her*. In addition, they can appear in a predicate position and be restrictors to the Gen operator. Each case is exemplified in (38), respectively (see Jiang 2012 for Chinese and Russian).

(38) a. O   iki (?tane) çocuk
          that two CL   child
          'Those two children'

     b. Her   on (tane) çocuk-tan bir-i
          every ten CL   child-ABL one-3SGPOSS
          'One out of every ten children'

     c. Bu sene al-dığ-ım   ilk hediye iki (tane) kitap-tı.
          this year receive-REL-1SGPOSS first gift   two CL   book-PAST
          'The first gifts that I received this year were two books.'

     d. Bir (tane) köpek havla-r,   iki (tane) köpek saldır-ır.
          one CL   dog   bark-AOR two CL   dog   attack-AOR
          'One dog barks, two dogs attack.'

These facts suggest that NCs with *tane* should have a predicative denotation independently of their argumental denotation that comes with a built-in choice function variable. It seems, however, that their predicative denotation is only available for overt determiners. This is an open problem just as is the case for NCs of bare NP languages in general, which I leave for further considerations.

In sum, I have suggested that the difference that the presence of *tane* creates in NCs in terms of definiteness is due to its association with a built-in choice function variable when NCs with it occur in the argument positions.

4 *Tane* and the Distributive *dA*

In Section 2.2, we have seen that when NCs without *tane* are accompanied with the particle *dA*, they can either receive a distributive reading or an additive+collective reading. We

have also seen that NCs with *tane* are only compatible with the additive+collective reading of *dA* since they cannot receive definite readings.

In this section, I will sketch a possible analysis of the semantics of *dA* based on Szabolcsi's (2015) account for Japanese *mo*. This analysis is not without problems but it is presented with the aim of giving the readers a clear idea about what might be going on with constructions bearing *dA* and how they are related to NCs.

4.1 Distributivity and *dA*

Besides NCs without *tane*, *dA* can also be used to achieve a distributive reading with conjoined DPs, but not with plural nouns and plural pronouns where it only contributes the additive interpretation, as exemplified below. Notice that *dA* cliticizes on both conjuncts resulting in a double realization.

(39) Ali **de** Ayşe **de** bir şişe süt iç-ti.
Ali DA Ayşe DA one bottle milk drink-PAST
'Ali and Ayşe **each** drank a bottle of milk.' (distributive-two bottles)

(40) a. Kız-lar **da** bir şişe süt iç-ti.
girl-PL DA one bottle milk drink-PAST
'The girls drank a bottle of milk, **too**.' (additive+collective-one bottle)

 b. Biz **de** bir şişe süt iç-ti-k.
we DA one bottle milk drink-PAST-1PL
'We drank a bottle of milk, **too**.' (additive+collective-one bottle)

dA is very similar to Japanese *mo* analyzed recently in Szabolcsi (2015) in having one occurrence per conjunct (in three-way conjuncts, there are three *dAs*), and providing distributive or additive interpretations.[12]

There are two main points of Szabolcsi's analysis of *mo* that I will present here. The first part

[12]Note that Szabolcsi also analyzes the particle *ka* in Japanese, treating both *mo* and *ka* as generic representations of similar particles in other languages, such as the Hungarian *vala/vagy* (*ka*) and *is* (*mo*). See Szabolcsi (2015) for further details.

is concerned with the double realization of *mo* on the conjuncts of a conjoined subject, and the second part pertains to the occurrence of *mo* with indeterminate pronouns which results in a universally quantified expression. I show the first part by applying it to the Turkish case below. As for the second part, Turkish *dA* does not combine with indeterminate pronouns for universal quantification as opposed to *mo*. Nevertheless, that part of the analysis will be influential in understanding the nature of its combination with NCs.

4.1.1 *mo/dA* with conjoined subjects

Szabolcsi claims that *mo* selects and constraints conjunctive contexts where its host proposition $[\![X]\!]$ is unidirectionally entailed by an immediate context proposition $[\![Y]\!]$, where both $[\![X]\!]$ and $[\![Y]\!]$ address the same question under discussion. As a consequence, $[\![Y]\!]$ cannot have a collective interpretation. It also requires the existence of another proposition $[\![Z]\!]$ parallel to $[\![X]\!]$ holding in $[\![Y]\!]$. This proposition can either be explicitly given or provided by the context.

In the cases where *mo* is an additive particle as in *John mo ran* 'John, too, ran', this requirement comes as a presupposition, i.e., a salient individual distinct from John ran. In the cases where *mo* acts as a distributive particle as in *John mo Mary mo ran* 'John, as well as Mary, ran', *mo* is considered as having a similar role. The *mo* in *John mo (ran)* requires that a salient individual distinct from John ran, which is satisfied by Mary's running. The same goes for the *mo* in *Mary mo (ran)*, whose requirement is satisfied by John's running. However, since presuppositions project from left to right, it would be wrong to define this condition of *mo* as a presupposition.

To capture the intuitions shared by the additive *mo* and distributive *mo*, Szabolcsi adopts the notion of post-suppositions in the sense of Brasoveanu (2013). Post-suppositions are delayed until after the at-issue content is established and they are checked simultaneously. The delay is delimited by the scope of an externally static operator. So, in the cases of additive *mo* and distributive *mo*, the checking of the definedness condition of *mo* is delayed. While this ensures that *mo*s in the distributive case wait for each other to check their

conditions, in the additive case, the short delay does not make a difference.

More precisely, *mo* inhabits conjunctive contexts, and just as universal quantification and set intersection, conjunction is a case of lattice-theoretic meet ∩, which is defined as the greatest lower bounds in partially ordered sets. However, inspired by Winter, (1995, 1998) and Den Dikken (2006), Szabolcsi claims that *mo* itself does not need to be held responsible for performing the meet operation. Instead, ∩ is performed by silent elements or helpers. Szabolcsi identifies these elements as *Junction* following Den Dikken.

Let us review the application of Szabolcsi's account to *dA* with the example in (39). The structure of this sentence is represented in (41) (adapted from Szabolcsi's (45') given for its counterpart with *mo*, pg. 26).

(41)
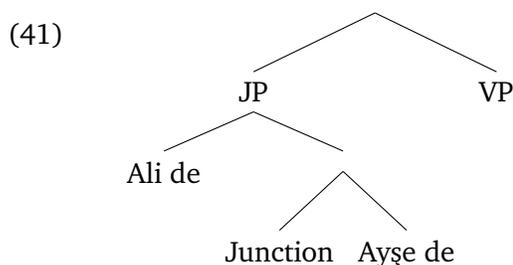
dA is associated with focus.[13] In (39), X-*dA* and Z-*dA*, shown more explicitly below, are each other's focus alternatives, with $[\![X]\!]$ and $[\![Z]\!]$ being logically independent. Szabolcsi assumes that although the surface/syntactic host of *mo* can be a clause or a smaller unit, semantically the host has always the type of propositions. Along the same lines, although the syntactic hosts of *dAs* are *Ali* and *Ayşe* in our example, semantically the hosts are the propositions given in (42b).

(42) a.   [$_Y$ [X *dA*] [Z *dA*]]

  b.   [[Ali bir şişe süt iç-ti]   ve [Ayşe bir şişe süt iç-ti]].
       Ali one bottle milk drink-PAST and Ayşe one bottle milk drink-PAST
       'Ali drank a bottle of milk and Ayşe drank a bottle of milk.'

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[13]In the distributive reading, *dA* receives the stress and in the additive reading, the stress falls on its host.

(43) a. X = [Ali drank a bottle of milk.]

b. Z = [Ayşe drank a bottle of milk.]

c. Y = [Ali drank a bottle of milk and Ayşe drank a bottle of milk.]

Each occurrence of *dA* is responsible for its own host proposition requiring it to be entailed by an immediate context proposition together with the existence of a parallel proposition. Namely, here the immediate context proposition $[\![Y]\!]$ should entail $[\![X]\!]$, and $[\![X]\!]$ should have an independent parallel proposition, which is $[\![Z]\!]$. Similarly, $[\![Y]\!]$ should entail $[\![Z]\!]$, and $[\![Z]\!]$ should have a parallel proposition, which is $[\![X]\!]$. Since these requirements are satisfied, it is ensured that $[\![Y]\!]$ cannot have a collective reading, so we get a distributive interpretation in the end.

4.1.2 *mo* with indeterminate pronouns

mo also co-occurs with indeterminate pronouns i.e., wh-words like *dare* 'who' in Japanese, as a result of which universal quantification is obtained. The difference between *mo*'s occurrence with conjoined subjects and its occurrence with indeterminate pronouns is the fact that there is only one realization of *mo* in the latter. The puzzling issue is what counts as the host of *mo* when it has a single realization on an indeterminate pronoun. Szabolcsi suggests that the host of *mo* is, for each individual that the indeterminate pronoun ranges over, the proposition that corresponds to that individual. Under this assumption, the requirements of *mo* are satisfied.

To repeat, *mo* requires its host proposition $[\![X]\!]$ to be entailed by an immediate context proposition $[\![Y]\!]$, together with the existence of a parallel proposition $[\![Z]\!]$. Universal quantification is obtained by generalized $\cap$ with the downward closure operator. Note that Szabolcsi adopts the tools of Inquisitive Semantics to elucidate the proposal and here I will also represent the semantics of *dA* within the same framework. In Inquisitive Semantics, propositions are treated to be downward closed sets of possibilities (a possibility being a set of worlds), which is expressed by using power sets (e.g., $[\![Joe\ dances]\!] = \wp\ \{w\!:\ dance_w\ (j)\}$)

(Ciardelli et al. 2017).[14]

Based on that, the representation of Japanese *Dare-mo-ga odorimasu*, 'Everyone dances.' is given below (Szabolcsi 2015, pg. 32 & 34):

(44)   The downward closure of S, $S^{\downarrow} := \{p \mid p \subseteq q \text{ for some } q \in S\}$

(45)   If the persons are Kate, Mary and Joe, then

$\cap\{\{w: \text{dance}_w(x)\} : x \in D_e\}^{\downarrow}$

$= \wp\,\{w: dance_w\,(k)\} \cap \wp\,\{w: dance_w\,(m)\} \cap \wp\,\{w: dance_w\,(j)\}$

(46) $[\![everyone]\!] = \lambda P_{\langle e, \langle\langle s,t\rangle, t\rangle\rangle} . \bigcap_{x \in D_e} P(x)$

$[\![dance]\!] = \lambda x_e . dance_{\langle e, \langle\langle s,t\rangle, t\rangle\rangle}(x)$

$[\![everyone]\!]([\![dance]\!]) = \bigcap_{x \in D_e} dance(x)$

$= \cap\{\{w : dance(x)(w)\} : x \in D_e\}^{\downarrow}$

In this specific example, there are three silent instances of *mo* (realized as a single *mo* overtly) and each of them has a host proposition. These host propositions and the immediate context proposition are shown below.

(47)   a.   X = Kate dances.

        b.   Z = Mary dances.

        c.   Q = Joe dances.

        d.   Y = Kate dances, Mary dances, and Joe dances (everyone dances).

Each host proposition ($[\![X]\!]$, $[\![Z]\!]$, and $[\![Q]\!]$) is entailed by an immediate context proposition $[\![Y]\!]$ and each has a parallel proposition holding in $[\![Y]\!]$ and independent of it: $[\![X]\!]$ has $[\![Z]\!]$ and $[\![Q]\!]$, $[\![Z]\!]$ has $[\![X]\!]$ and $[\![Q]\!]$, and $[\![Q]\!]$ has $[\![X]\!]$ and $[\![Z]\!]$. So, the requirements of each instance of *mos* are satisfied.

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[14]For simplicity, I will only resort to Inquisitive Semantics when we discuss *dA*.

In the following section, I will show how *dA* interacts with NCs in light of this account.

4.2 *dA* with Numeral Constructions

The semantics that I suggest for the occurrence of *dA* with NCs is laid out below. The relevant examples which are given in (33) are repeated here as (48). As a reminder, the vital point is that when *dA* appears with NCs without *tane*, the interpretation is ambiguous in having a distributive reading and an additive+collective reading, whereas when it appears on NCs with *tane*, the distributive reading is not available.

(48)   a.   İki   çocuk **da** bir şişe   süt iç-ti.
               Two child DA one bottle milk drink-PAST
               'The two children **each** drank a bottle of milk.' (distributive-two bottles)

               '(The) two children drank a bottle of milk, **too**.' (additive+collective-one bottle)

    b.   İki tane çocuk **da** bir şişe   süt iç-ti.
               two CL   child DA one bottle milk drink-PAST
               '(*The) two children drank one bottle of wine, **too**.' (additive+collective-one bottle)

I will first discuss the additive+collective reading, which applies to both types of NCs, and then the distributive reading, which only applies to NCs without *tane*.

4.2.1 The additive+collective reading

Here we examine the analysis of the following reading: '(The) two children drank a bottle of milk, too.' The context that brings out this meaning is such that there is an individual (or individuals), let us say Joe in our case, who drank a bottle of milk in addition to (the) two children, let us say Kate and Mary, i.e., k⊕m, who drank a bottle of milk collectively. Since the additive *dA* does not restrict its host in terms of definiteness/indefiniteness k⊕m can either be the unique/maximal referent in the case of the definite NC without *tane*, or the

individual selected by the choice function in the case of the indefinite NC with or without *tane*.[15]

(49) a. $[_Y \text{ [Z] [X } dA]]$

b. [[Joe bir şişe süt iç-ti]   ve [iki (tane) çocuk bir şişe süt
    Joe one bottle milk drink-PAST and two CL   child one bottle milk
    iç-ti]].
    drink-PAST
    with *tane*: 'Joe drank a bottle of milk and two children drank a bottle of milk.'

    without *tane*: 'Joe drank a bottle of milk and (the) two children drank a bottle of milk.'

(50) a. X = (The) two children (Kate⊕Mary) drank a bottle of milk.

b. Z = Joe drank a bottle of milk.

c. Y = Joe drank a bottle of milk and (the) two children (Kate⊕Mary) drank a bottle of milk.'

(51) ℘ {*w: drank a bottle of milk$_w$ (j)*} ∩ ℘ {*w: drank a bottle of milk$_w$ (k⊕m)*}

Here, the requirements of *dA* are satisfied because its host proposition $[\![X]\!]$ is entailed by an immediate context proposition $[\![Y]\!]$, and there is another proposition $[\![Z]\!]$ parallel to $[\![X]\!]$ holding in $[\![Y]\!]$ and independent of $[\![X]\!]$. Note that $[\![Z]\!]$ is either provided by context or uttered explicitly before X and there is only one *dA* the host of which is $[\![X]\!]$.

This semantics ensures that in total two bottles of milk were drunk, one by Joe and the other by (the) two children.[16] The other options where Joe and two children drank a bottle of milk collectively (one bottle in total), and Joe and two children each drank a bottle of milk separately (three bottles in total) are not derived.

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[15]Ciardelli et al. (2017) refer the readers to the theories proposed in Brasoveanu and Farkas (2011) and Onea (2015) for a possible analysis of indefinites that is compatible with the Inquisitive Semantics framework. See also Charlow's (2018) account which is formulated using alternatives. However, it should be noted that the choice function theory does not clash with Inquisitive Semantics, therefore, I retain it when I resort to this framework.

[16]Here, *two children* is interpreted as *exactly two children*. In the context under discussion, Joe cannot be a child.

4.2.2 The distributive reading

Now, let us examine the analysis of the following reading: 'The two children each drank a bottle of milk.', which is only available when the NC is without *tane*. In this case, the context is such that there are only two children and both Child 1 (Kate) and Child 2 (Mary) drank a bottle of milk individually. Here, I suggest applying the analysis of *mo* occurring with indeterminate pronouns sketched above to this case.

The first important issue to be understood is at what level *dA* attaches to its hosts. In the case of Japanese *mo* occurring with indeterminate pronouns, we can say that it can co-occur with a set denoting element, i.e., indeterminate pronouns, and create universal quantification out of it. The following example suggests that this is not possible in Turkish. *dA* cannot take a bare singular noun denoting an atomic predicate as its host to yield a universally quantified DP, as shown in (52b), which can only mean that 'the child, too, drank a bottle of milk.' Instead, universal quantification is only possible with *her* 'every', as shown in (52a).

(52) a. Her   çocuk bir şişe   süt   iç-ti.
          every child one bottle milk drink-PAST
          'Every child drank a bottle of milk.'

    b. Çocuk da bir şişe   süt   iç-ti.
        child   DA one bottle milk drink-PAST
        'The child drank a bottle of milk, too.'

        Not: 'Every child drank a bottle of milk.'

Therefore, it seems that *dA* needs to combine with definite NCs when it contributes a distributive reading. However, intuitively speaking, the distributive role of *dA* is still associated with universal quantification that will be ensured by generalized ∩.

As is laid out below, the host of *dA* is considered to be, for each (atomic) individual that the NC refers to, the proposition that corresponds to that individual. This means that there are two *dAs* if the numeral in the NC is two and three *dAs* if the numeral in the NC is three.

Each *dA* is responsible for checking the conditions for their own host propositions. Since *dA* is associated with generalized ∩, it is expected to operate on maximal contexts as is the case with universal quantifiers. In other words, 'every boy drank a bottle of milk.' means that every one of the boys in the context drank a bottle of milk, and there cannot be other boys who did not. The same goes for the case of *dA*.

So, following Szabolcsi (2015), I assume that there are two host propositions of *dA* in the particular example that we are analyzing, regardless of the fact that there is only a single instance of it. These propositions correspond to the individuals Kate and Mary, which I suggest is obtained by an atomizer operator (AT) defined as in (53). Based on that the NC *iki çocuk* 'two children' has the semantics in (54) when it is a host to *dA*. The e-type $⟦\iota\ two\ child⟧$ is lifted to a generalized quantifier of type $\langle\langle e, \langle\langle s, t\rangle, t\rangle\rangle, \langle\langle s, t\rangle, t\rangle\rangle$.

(53)   If X is a maximal plural individual, then

$$\mathrm{X}^{AT} = \{\mathrm{x} \mid x \leq X \wedge x \in AT\}^{17}$$

(54) $⟦two\ child⟧ = \lambda P_{\langle e, \langle\langle s,t\rangle, t\rangle\rangle} \cdot \bigcap_{x \in (⟦\iota\ two\ child⟧)^{AT}} P(x)$

Recall that the sentence we are analyzing is given in (48a), repeated below as (55). The structure of (55) is given in (56), considering that the two children are Kate and Mary:

(55)   İki çocuk **da** bir şişe süt iç-ti.
         Two child DA one bottle milk drink-PAST
         'The two children **each** drank a bottle of milk.' (distributive-two bottles)

(56)   a. [$_Y$ [X *dA*] [Z *dA*]]

         b. [[Kate bir şişe süt iç-ti]   ve [Mary bir şişe süt iç-ti]].
             Kate one bottle milk drink-PAST and Mary one bottle milk drink-PAST
             'Kate drank a bottle of milk and Mary drank a bottle of milk.'

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[17] The AT operator seems to have a similar role as the distributor operator D, but it is different from it in that it does not take a property which it will distribute over every atomic instance of the subject term. Its job is to take a maximal plural individual and atomize it. The distributivity itself is a result of the requirements of *dA*. In addition, the AT operator rules out some undesired readings such as the one where there are three children at issue and two of them drinks a bottle of milk together and one of them drinks a bottle of milk separately.

(57) a. X = Kate drank a bottle of milk.

b. Z = Mary drank a bottle of milk.

c. Y = Kate drank a bottle of milk and Mary drank a bottle of milk.

The interpretation of (55) is given in (58) which is illustrated in more detail in (59).

(58) If $\llbracket \iota \ two \ child \rrbracket$ equals k$\oplus$m, then

$\cap \{\{$w: $drank \ a \ bottle \ of \ milk_w(x)\} : x \in (k \oplus m)^{AT}\}^{\downarrow}$

$= \wp \{w: drank \ a \ bottle \ of \ milk_w \ (k)\} \cap \wp \{w: drank \ a \ bottle \ of \ milk_w \ (m)\}$

(59) $\llbracket two \ child \rrbracket = \lambda P_{\langle e, \langle \langle s,t \rangle, t \rangle \rangle} \cdot \bigcap_{x \in (\llbracket \iota \ two \ child \rrbracket)^{AT}} \ P(x)$

$\llbracket drank \ a \ bottle \ of \ milk \rrbracket = \lambda x_e.dabom_{\langle e, \langle \langle s,t \rangle, t \rangle \rangle}(x)$

$\llbracket two \ child \rrbracket (\llbracket drank \ a \ bottle \ of \ milk \rrbracket) = \bigcap_{x \in (\llbracket \iota \ two \ child \rrbracket)^{AT}} \ dabom(x)$

$= \cap \{\{w : dabom(x)(w)\} : x \in (\llbracket \iota \ two \ child \rrbracket)^{AT}\}^{\downarrow}$

Each *dA* is responsible for imposing its requirements on its own host. The first instance of *dA* is satisfied because its host proposition $\llbracket X \rrbracket$ (i.e., [$_X$ Kate drank a bottle of milk]) is entailed by an immediate context proposition $\llbracket Y \rrbracket$, and there is another proposition $\llbracket Z \rrbracket$ parallel to $\llbracket X \rrbracket$ holding in $\llbracket Y \rrbracket$ but independent of $\llbracket X \rrbracket$.

The same situation holds for the second instance of *dA*. Here the host proposition is $\llbracket Z \rrbracket$ (i.e., [$_Z$ Mary drank a bottle of milk]). It is entailed by $\llbracket Y \rrbracket$ and it has a parallel proposition $\llbracket X \rrbracket$ which is independent of $\llbracket Z \rrbracket$ and holds in $\llbracket Y \rrbracket$.

This eliminates NCs with *tane* and any non-definite elements to be hosts for *dA* in its distributive reading. However, we have seen above, plural definites and plural pronouns are still incompatible with the distributive role of *dA* although they satisfy the maximality requirement of it. I believe that this follows from the 'weak maximality' of plural definites and plural pronouns. It is a well-known fact that plural definites allow exceptions in their denotations (Kroch, 1975). Consider the examples given in (60) (Brisson 1998, pg. 36).

(60)   a.   The boys are building a raft.

           b.   Every boy is building a raft.

(60a) could be true in a situation where all the boys in the context are building a raft together or individually. It could also mean that the boys are building a raft together or individually with the exception of some, especially if we are dealing with large enough groups of boys. On the other hand, universally quantified counterpart of it in (60b) does not allow non-maximal interpretations and requires that every one of the boys are building a raft individually (one boy, one raft). It seems to be the case that when there is a universal quantification at issue, exceptions are not tolerated.

dA seems to be sensitive to strong vs. weak maximality potential of the element that it takes as its host.[18] Definite NCs are strongly maximal in that they do not tolerate exceptions even if large groups are at issue. So, if the fact that 91 boys are building a raft is reported as 96 boys are building raft, then it would be false.[19]

Alternatively, *dA* might have a pragmatic need that an exact number of the atoms be explicit in the structure. In other words, for the AT operator to apply to a plural individual, which eventually will determine the number of *dA*s, the exact number of the atoms might need to be made available to it in the structure. This is only possible by hosts that are NCs. Since plural definites or plural pronouns do not provide this information they are considered to be atoms by *dA*, namely they are treated as groups, eventually having an additive role in these cases. The reason why *dA* cannot also add a distributive reading to NCs in its additive role is left as an open question.

To summarize, we have seen that when *dA* occurs with NCs without *tane*, it can contribute both an additive and a distributive reading. This contrasts with NCs with *tane*, with which *dA* cannot function in its distributive role. Applying Szabolcsi's analysis for Japanese *mo* to

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[18]This remains a language specific issue. The particle *dou* of Chinese is also very similar to Japanese *mo* and Turkish *dA* in having a quantifier/distributor role. However, it is compatible with plurals, plural pronouns, and NCs as opposed to Turkish *dA* (Lin 1998, Giannakidou and Cheng 2006, McNally 1992, Xiang 2019, Liu 2016a, 2016b, 2018, Szabolcsi et al. 2014).

[19]Rounding it as 'a hundred boys' would be possible, but that is for different purposes, which is not available for numbers that are not tens, hundreds, etc.

Turkish *dA*, I have shown this to follow from the fact that NCs with *tane* cannot be definite, as opposed to NCs without *tane*.

5 Where the Indefiniteness of *tane* is Overridden

So far, we have seen that NCs with *tane* depart from NCs without *tane* in being restricted to indefinite interpretations only, which also prevents their occurrence with *dA* in its distributive function. I have proposed that the indefiniteness of NCs with *tane* follows from the built-in choice function variable in the semantics of *tane*. This differs from NCs without *tane* which can be associated with a choice function variable or the *iota* operator.

In this section, I discuss two cases where NCs with *tane* become compatible with definite interpretations, which seems to contradict with the claim of obligatory indefiniteness. These involve their modification with outer relative clauses and their occurrence in a special partitive construction which obligatorily is accompanied by the distributive *dA*. Below, I show that it is possible to derive definiteness without losing the indefinite status of *tane*.

5.1 Outer Relative Clauses and *tane*

In Turkish, when a subject is relativized, the verb receives the suffix *-An*, whereas when an object is relativized, the verb receives the nominalizer suffixes *-DIK* or *-AcAK*, depending on the tense (Underhill 1972, Hankamer and Knecht 1976, Csató 1985, Barker et al. 1990, Kornfilt 2000b, Öztürk 2008, Özçelik 2016).[20] In the latter case, the whole RC appears with a possessive structure where the subject receives the genitive case and the verb+*-DIK/-AcAK* receives the possessive agreement marker.

(61) a. Ali-yi   gör-en adam
          Ali-ACC see-AN man
          'the man that saw Ali.'

---

[20]See Özsoy (1994), Aygen (2003), and Öztürk (2008) for more discussion on these two strategies.

b. Ali-nin gör-düğ-ü   adam
   Ali-GEN see-DIK-3SGPOSS man
   'The man that Ali saw.'

RCs can potentially appear in two different positions, preceding a determiner or following it but occurring before the noun it modifies.[21] These two options are not freely available to all types of RCs. While some RCs only precede the determiner, some RCs are free to occur in both positions. This variation is insensitive to object vs. subject relative clauses. To my knowledge, there is no clear-cut explanation or generalization regarding this in the literature. Since we are only concerned with the existence of such a contrast, I ignore the underlying factors behind it.

Below I exemplify both types of RCs. I will call the ones preceding determiners 'outer RCs', as shown in (62), whereas I will call the ones occurring pre-nominally 'inner RCs', as shown in (63).[22]

(62)   Outer Relative Clauses

   a.   [[Ali-nin yaz-dığ-ı]   **her**   kitap] güzel-di.
      Ali-GEN   write-DIK-3SGPOSS every book beautiful-PAST
      'Every book that Ali wrote was beautiful.'

   b.   [[Gör-düğ-ü]   **her**   kitab-ı] al-dı.
      see-DIK-3SGPOSS every book-ACC buy-PAST
      '(S)he bought every book that (s)he saw.'

   c.   [[Yüzme bil-en] **her**   kadın] havuz-da-y-dı.
      swimming know-AN every woman pool-LOC-COP-PAST
      'Every woman who knew how to swim was in the pool.'

(63)   Inner Relative Clauses

   a. *[**Her** [[Ali-nin yaz-dığ-ı]   kitap]] güzel-di.
      every Ali-GEN   write-DIK-3SGPOSS book   beautiful-PAST
      'Every book that Ali wrote was beautiful.'

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[21]Kornfilt (2000a, 2005) and Özçelik (2016) explain this by Richard's (1994) head-raising analysis of RCs. See also Gökgöz (2014).

[22]Note also that *her* can intervene between the genitive marked subject and the predicate in (62), i.e., *Ali'nin her yazdığı kitap* (Demirok 2017).

b. [**Her** [[gör-düğ-ü] kitab-ı]] al-dı.
every see-DIK-3SGPOSS book-ACC buy-PAST
'(S)he bought every book that (s)he saw.'

c. [**Her** [[yüzme bil-en] kadın]] havuz-da-y-dı.
every swimming know-AN woman pool-LOC-COP-PAST
'Every woman who knew how to swim was in the pool.'

What is crucial for our purposes is the following: When NCs with *tane* occur with outer RCs, they can be interpreted as definites, but not when they occur with inner RCs. This is evidenced by their ability to be used in anaphoric contexts, as shown in (64) and (65).[23]

(64) Market-ten üç (tane) yumurta al-dı-m. Pazar-dan da iki (tane)
grocery-ABL three CL egg buy-PAST-1SG bazaar-ABL also two CL
yumurta al-dı-m. Ama [**market-ten al-dığ-ım** üç (?tane)
egg buy-PAST-1SG but grocery-ABL buy-DIK-1SGPOSS three CL
yumurta] bozuk çık-tı.
egg rotten turn.out-PAST
'I bought three eggs from the grocery store. I also got two eggs from the bazaar.

But the three eggs that I bought from the grocery store turned out to be rotten.'

(65) Context: Pazar günü plaja gittik. Plajda üç (tane) kadın, iki (tane) adam ve iki
(tane) de çocuk vardı. Kadınların iki (tane)si yüzme biliyordu. Sonra aniden
çocukların biri boğulmaya başladı.
'We went to the beach on Sunday. There were three women, two men, two kids on

the beach. Two of the women knew how to swim. Then, all of a sudden one of the

kids started to drown.'

a. [**Yüzme bil-en** iki (?tane) kadın] hemen deniz-e koş-tu.
swimming know-AN two CL woman quickly sea-DAT run-PAST
'The two women who knew how to swim ran to the sea.'

b. [İki (#tane) [[**yüzme bil-en**] kadın]] hemen deniz-e koş-tu.

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[23]I represent the cases of *tane* with the question mark. This is because the use of *tane* feels redundant, though not unacceptable. The best way to say these sentences is with the plural form, e.g., *marketten aldığım yumurta-lar* 'the eggs that I bought from the store'. When the NC is fully spelled out, *tane* feels extra since it is less of a repetition without *tane*. Notice, however, that NCs with *tane* which are not accompanied by an outer RC are completely bad in anaphoric contexts.

The fact that NCs with *tane* can be interpreted as definite with outer RCs is also evidenced by their compatibility with the distributive role of *dA* in these cases, as shown in (66).

(66)   Market-ten üç   (tane) yumurta al-dı-m.   Pazar-dan da iki (tane)
       grocery-ABL three CL   egg   buy-PAST-1SG bazaar-ABL also two CL
       yumurta al-dı-m.   Ama **market-ten al-dığ-ım**   üç   (?tane) yumurta
       egg   buy-PAST-1SG but grocery-ABL buy-DIK-1SGPOSS three CL   egg
       da bozuk çık-tı.
       DA rotten turn.out-PAST
       'I bought three eggs from the grocery store. I also got two eggs from the bazaar.

       But the three eggs that I bought from the grocery store turned out to be rotten

       each.'

Here, *dA* does not add an additive reading but refers to the three eggs that were bought from the grocery store conveying that each one of them turned out to be rotten. This shows that the incompatibility of *tane* with the distributive role of *dA* follows from the definiteness requirement of *dA* in this role. Clearly, *tane* cannot satisfy this requirement without the help of an outer RC. Then, the question is how outer RCs can make NCs with *tane* definite.

Let us first determine how outer RCs are derived. I follow Özsoy (1996), Meral (2010), Baturay Meral and Meral (2016), and Demirok (2017) in that the internal position of the RC involves null-OP movement responsible for predicate abstraction (Chomsky 1977, Heim and Kratzer 1998) (but see fn 21). I further follow Demirok (2017) in that even if an RC moves out of its original pre-nominal position, there is evidence that it reconstructs. Consider the following example, where the RC involves a modified numeral in it. Although the RC precedes the universal quantifier and it is expected to take wide scope over it due to scope rigidity, it is interpreted under it. This proves that outer RCs are interpreted in their base position, at least in the case of scopal interaction.

(67)   [**En az iki öğrenci-nin çöz-ebil-diğ-i**   her soru] kolay-dı.
       at least two student-GEN solve-ABIL-DIK-3POSS every question easy-PAST
       'Every question that at least two students were able to solve was easy.'

       (*at least > ∀)

Based on that, the structures of outer and inner RCs can be represented as follows:[24]

(68) Outer RCs

```
            DP
          /    \
       RC_i     DP
             /      \
          every      D'
                   /    \
                 NP      D
                /  \
             RC_i   N
```

(69) Inner RCs

```
            DP
          /    \
       every    D'
              /    \
            NP      D
           /  \
         RC    N
```
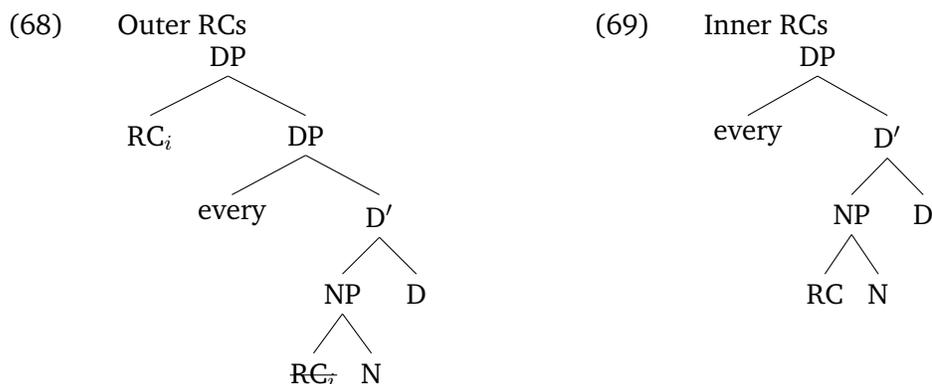
Now, let us examine the interaction of outer RCs with NCs. Although they are 'outer' in the sense that they appear outside of the NC, they are not genuinely outer since they reconstruct to their pre-nominal position for interpretation. Therefore, their interpretation is the same as in the case of an inner RC. The fact that the outer RC reconstructs is evidenced by (70), where the modified numeral residing inside the RC is interpreted under the NC with *tane*. Based on this, I assume the structure in (71) for the seemingly outer RCs modifying an NC.

(70) [**En az iki öğrenci-nin çöz-ebil-diğ-i**   üç   (tane) soru]
       at   least two student-GEN solve-ABIL-DIK-3SGPOSS three CL   question
       kolay-dı.
       easy-PAST
       'Three questions that at least two students were able to solve was easy.'

       (*at least > three)

(71)

```
               NP
             /    \
          RC_i     NP
                 /     \
              CardP     N'
             /    \    /  \
          NumP   Card RC_i  N
           |      |
           3    ∅/tane_f
```

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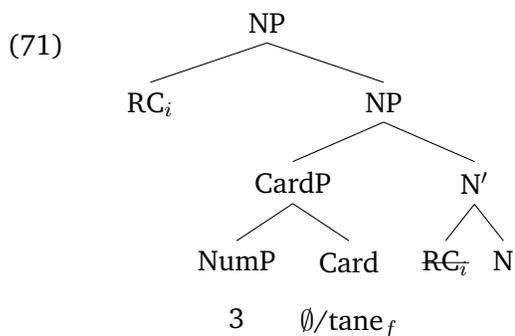
[24]Since Turkish is a head-final language, I assume that *her* 'every' is inserted under the Spec of D to derive the correct word order.

Since the outer RC reconstructs, the only available interpretation for NCs with *tane* is expected to be an indefinite one given that they come with a built-in choice function variable. Consider the example in (72) where the modified NC with *tane* is an indefinite, the derivation of which is shown in (73).

(72) Market-ten beş (tane) yumurta al-dı-m.   Pazar-dan da iki (tane)
grocery-ABL five CL   egg   buy-PAST-1SG bazaar-ABL also two CL
yumurta al-dı-m.   Ama [**market-ten al-dığ-ım**   üç   (tane)
egg   buy-PAST-1SG but grocery-ABL buy-DIK-1SGPOSS three CL
yumurta] bozuk çık-tı.
egg   rotten turn.out-PAST
'I bought five eggs from the grocery store. I also got two eggs from the bazaar. But three eggs that I bought from the grocery store turned out to be rotten.'

a. $\exists f\ [CH(f) \wedge rotten(f(\lambda x.\ \exists S\ [\prod (S)(x) \wedge |S| = 3 \wedge \forall s \in S\ Ibfs(s) \wedge egg(s)])))]$

b. There is a choice function such that the plural individual that it selects, which is three eggs that I bought from the store, is rotten.

(73)
$$f(\lambda x.\ \exists S\ [\textstyle\prod(S)(x) \wedge |S| = 3 \wedge \forall s \in S\ Ibfs(s) \wedge egg(s)])$$

- RC$_i$
- $f(\lambda x.\ \exists S\ [\prod(S)(x) \wedge |S| = 3 \\ \wedge \forall s \in S\ Ibfs(s) \wedge egg(s)])$
  - $\lambda P_{AT}.\ f(\lambda x.\ \exists S\ [\prod(S)(x) \wedge |S| = 3 \\ \wedge \forall s \in S\ P(s)])$
    - NumP
      - 3
    - Card
      - $tane_f$
      - $\lambda n \lambda P_{AT}.\ f(\lambda x.\ \exists S\ [\prod(S)(x) \\ \wedge |S| = n \wedge \forall s \in S\ P(s)])$
  - $\lambda x.\ Ibfs(x) \wedge egg(x)$
    - ~~RC$_i$~~
      - $\lambda x.\ Ibfs(x)$
    - N
      - $\lambda x.\ egg(x)$
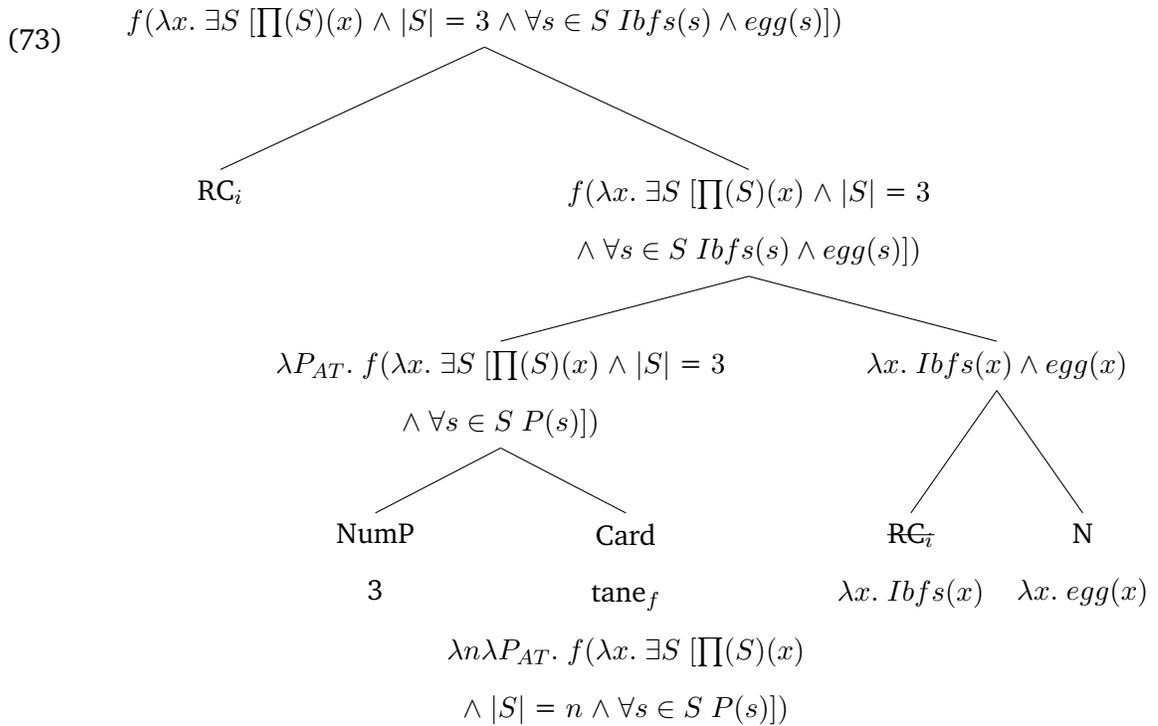
If the only available interpretation for the NC with *tane* is the indefinite one when the

RC reconstructs, the definite denotation must be derived if the RC stays above the NC. The puzzle, then, is to ensure that the RC is interpreted in its outer position and that the combination of it with the NC of type e results in a definite denotation. Below, I show that both of these could be possible.

I suggest that outer RCs can also be derived by merging them directly above expressions of type e. This is distinct from seemingly outer RCs which raise from the pre-nominal position, as represented in (71). However, in the alternative option that I propose, the RC modifies a null noun, analogous to the case of *the rich* in English, as suggested in Chierchia (1998b). In other words, the outer RC is nominalized by presumably combining with a null nominal head, which Chierchia represents as Δ.[25]

(74)   RC nominalization

$$
\begin{array}{c}
\text{NP} \\
\diagup\,\diagdown \\
\text{RC}\quad\text{N} \\
\Delta
\end{array}
$$
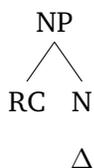
Although in the case of *the rich* the null noun is interpreted as the set of plural individuals that are people, in the case of RC nominalization in Turkish, its denotation is provided by the context, and it could be either singular or plural, as shown in (75). Note that this requires the pronominal forms 'one/ones' in English, as represented in the translations below.[26]

(75)   a.   Market-ten üç   (tane) yumurta al-dı-m.   Pazar-dan da iki (tane)
    grocery-ABL three CL   egg   buy-PAST-1SG bazaar-ABL also two CL
    yumurta al-dı-m.   Ama [**market-ten al-dığ-ım**   (~~yumurta-lar~~)]
    egg   buy-PAST-1SG but grocery-ABL buy-DIK-1SGPOSS egg-PL
    bozuk çık-tı.
    rotten turn.out-PAST

---

[25]It is not crystal clear how Δ is licensed given that deleted/null categories require licensing by a c-commanding licensor. However, it is a well-known fact since Longobardi (1994, 2000) that modification overrides this requirement. Namely, although Italian bare plurals require licensing by a lexical head or by focus, when they are modified this requirement does not hold anymore. See Dayal (2004a) for a more detailed discussion of this issue.

[26]This also holds for simple adjectives in Turkish, and in no way is restricted to RCs. However, adjectives tend not to occur preceding NCs, unlike RCs.

'I bought three eggs from the grocery store. I also got two eggs from the

bazaar. But the ones (eggs) that I bought from the grocery store turned out to

be rotten.'

b. Market-ten bir (tane) yumurta al-dı-m.   Pazar-dan da iki (tane)
    grocery-ABL one CL   egg   buy-PAST-1SG bazaar-ABL also two CL
    yumurta al-dı-m.   Ama [**market-ten al-dığ-ım**   (~~yumurta~~)]
    egg   buy-PAST-1SG but   grocery-ABL buy-DIK-1SGPOSS egg
    bozuk çık-tı.
    rotten turn.out-PAST
    'I bought three eggs from the grocery store. I also got two eggs from the

    bazaar. But the one (egg) that I bought from the grocery store turned out to

    be rotten.'

Chierchia (1998b) suggests that the null noun in *the rich* looks for a modifier, being 'a

function that applies to adjectival meanings to return something true of the totality of the

people having the property ascribed by the adjective' (pg. 395). Along the same lines, I

suggest the semantics in (76a) for the null noun that nominalizes RCs. Its combination

with RCs is given in (76b).

(76)   a. $\Delta = \lambda P \lambda x.\ x = \iota z\ [P(z) \wedge K(z)]$, where K is a contextually supplied property.

        b. $[_{NP}\ RC\ \Delta] = \lambda x.\ x = \iota z\ [[\![RC]\!](z) \wedge K(z)]$

The denotation of the nominalized RC [*marketten aldığım* Δ] 'Δ that I bought from the

store' is as shown in (77). K is the plural egg property in this particular case. So, the

nominalized RC denotes the property of the maximal individual that I bought from the

store and that are eggs.

(77) $[_{NP}\ RC\ \Delta] = \lambda x.\ x = \iota z\ [Ibfs(z) \wedge eggs(z)]$

Chierchia (1998b) considers Δ to be the property of a maximal individual since nominalized

adjectives are only compatible with the definite determiner, not quantificational elements

like 'every'. In other words, as being true of at most one thing, nominalized adjectives can only be a restrictor to the definite determiner, which carries a uniqueness presupposition. Although he presents this line of thinking as a stipulation, interestingly it also holds for the nominalized RCs in Turkish. Namely, they can only be interpreted as definites. They are incompatible with quantificational elements like *her* 'every', as shown in (78). This is regardless of the position of *her* with respect to the RC, which could in principal be either before or after it. Consider (78) in the context of (75a).

(78)   (*Her) **market-ten al-dığ-ım**   (*her) (~~yumurta~~) bozuk çık-tı.
        every grocery-ABL buy-DIK-1SGPOSS every egg   rotten turn.out-PAST
        Intended: 'Every egg that I bought from the grocery store turned out to be rotten.'

The next step is to combine this $\langle e, t \rangle$ type nominalized RC with the e-type NC that it is inserted above. The standard tools do not provide a way of doing this. Therefore, I adopt a novel way, which is the type-shifting operator *e-ident* implemented in Demirok (2019) and represented in (79).

(79)   e-ident

    $\lambda x \lambda P.\ \iota y\ [P(y) \wedge x = y]$

Demirok (2019) proposes *e-ident* to derive the semantics of expressions like 'War and Peace by Tolstoy', where 'War and Peace' is an individual of type e combining with an $\langle e, t \rangle$ type expression 'by Tolstoy'. The same logic can also be considered to apply to outer nominalized RCs combining with NCs with *tane*. The derivation of (64) is represented in (80).[27]

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[27]See Huang (2006), Jiang (2012), Li (2015) for a similar analysis for RCs in Chinese. Differently from the analysis here, they argue that RCs of Chinese are always of type e and can be inserted above an element of type e. The idea is compatible with the fact that Chinese RCs can also occur in argument positions without an overt head noun, as is the case in Turkish. The e-type RC and the sister e-type expression are proposed to combine via a compositional rule yielding the unique individual that is both part of the denotation RC and the denotation of its sister. We could have also adopted this idea by replacing the part-of relation with the equivalence relation. I believe that it would not make a difference.

(80)

$$\iota y \ [y = \iota z \ [Ibfs(z) \wedge eggs(z)] \ \wedge \ f(\lambda x. \ \exists S \ [\textstyle\prod(S)(x)$$
$$\wedge \ |S| = 3 \wedge \forall s \in S \ egg(s)]) = y]$$

RC+Δ

$\lambda x. \ x = \iota z \ [Ibfs(z) \wedge eggs(z)]$

$$\lambda P.\iota y \ [P(y) \wedge \ f(\lambda x. \ \exists S \ [\textstyle\prod(S)(x)$$
$$\wedge \ |S| = 3 \wedge \forall s \in S \ egg(s)]) = y]$$

$$f(\lambda x. \ \exists S \ [\textstyle\prod(S)(x)$$
$$\wedge \ |S| = 3 \wedge \forall s \in S \ egg(s)])$$

e-ident

$\lambda x \lambda P.\iota y [P(y)$
$\wedge \ x = y]$

$$\lambda P_{AT}. \ f(\lambda x. \ \exists S \ [\textstyle\prod(S)(x)$$
$$\wedge \ |S| = 3 \wedge \forall s \in S \ P(s)])$$

N$'$

NumP

3

Card

tane$_f$

N

$\lambda x. \ egg(x)$

$$\lambda n \lambda P_{AT}. \ f(\lambda x. \ \exists S \ [\textstyle\prod(S)(x)$$
$$\wedge \ |S| = n \wedge \forall s \in S \ P(s)])$$
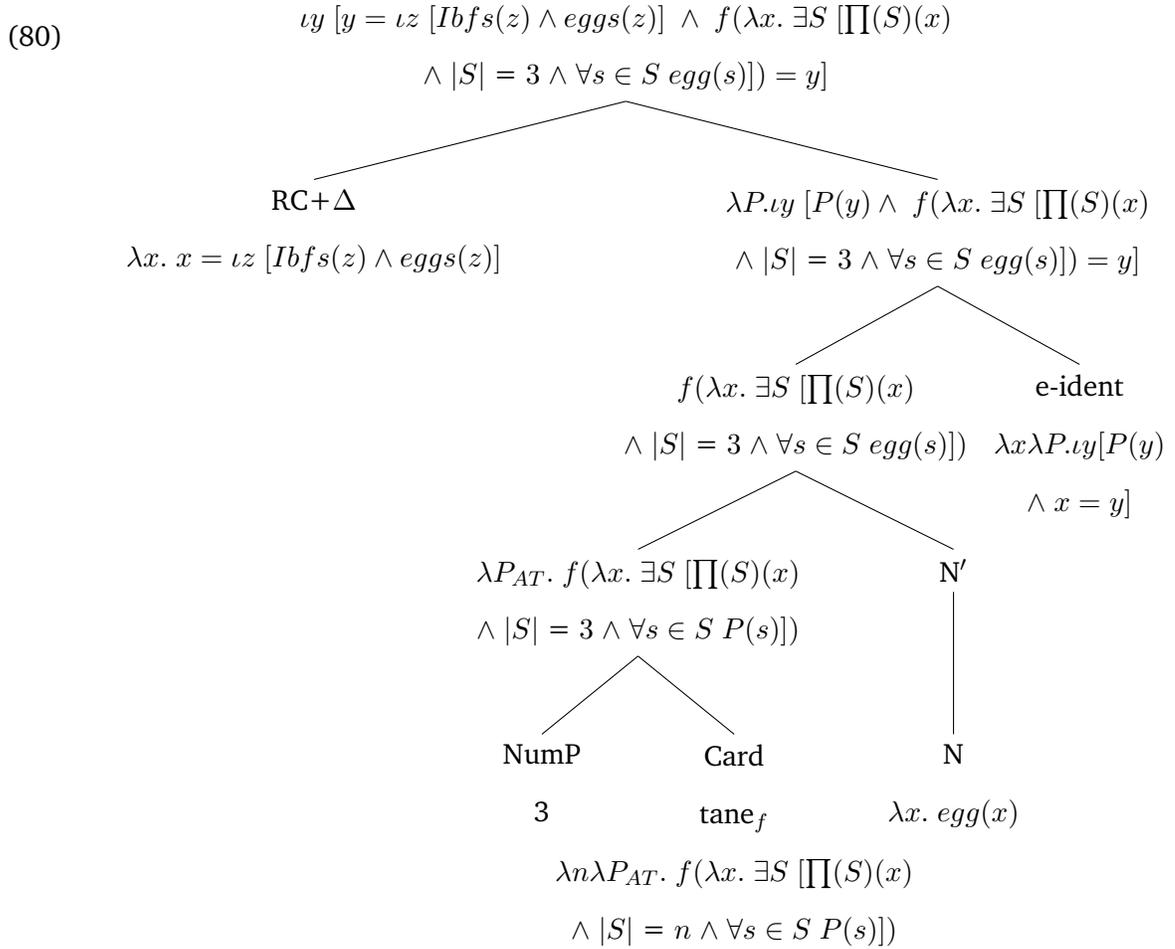
(81) a. $\exists f \ [CH(f) \ \wedge \ rotten(\iota y \ [y = \iota z \ [Ibfs(z) \wedge eggs(z)] \ \wedge \ f(\lambda x. \ \exists S \ [\textstyle\prod(S)(x) \wedge |S|$
$= 3 \wedge \forall s \in S \ egg(s)]) = y)]]$

b. There is a choice function such that the maximal plural individual [$_{RC}$ that equals the maximal individual that are eggs and that I bought from the store] and [$_{NC}$ that equals the three eggs the choice function selects] are rotten.

So, in (80), the [RC Δ] + [NC] combination denotes the unique individual which equals the totality of the eggs and that I bought from the store and which equals the individual a choice function selects out of the set denoted by the NC. Therefore, such structures are compatible with anaphoric contexts. They are also compatible with the distributive meaning of *dA* (see eg. (66)). When *dA* takes the unique individual denoted by this combination, its maximality requirement is satisfied. Additionally, since the complex NP includes a NC in it,

the 'numeral information' requirement of the *AT* operator is also provided.

My proposal raises two questions, though. One is regarding the issue of the reconstruction of RCs. Above, we have seen that when NCs with *tane* modified by an outer RC are interpreted as indefinites, the outer RC reconstructs. Does this mean that all outer RCs need to be interpreted in the pre-nominal position? My answer is in short no. The fact that the RC reconstructs in this case does not necessitate that all outer RCs originate in the pre-nominal position. I have shown how a base-generated outer RC yields a definite interpretation.

Alternatively, we could think of the outer RC in (64) as situated in the pre-nominal position, which raises above the NC for some reason (e.g., topicalization) and gets associated with Δ there, subsequently reconstructing together with it. This view cannot be adopted since the property that *tane* combines with is an atomic property, and the reconstructed element would be the maximal plural eggs that are bought from the store. So, it is not possible for an individual to be both an atomic egg and the maximal plural eggs at the same time.

The claim that outer RCs are directly merged above the NC in cases like (64) also raises the question whether they are appositive/non-restrictive RCs. In the null-OP movement analyses, a restrictive RC is a sister of the antecedent noun (Chomsky 1977, Heim and Kratzer 1998).[28] Appositive RCs, though, cannot be situated inside a DP since D does not take scope over the RC (Potts 2005). The insertion of the RC outside the NC in (64) seems to suggest that it should be a non-restrictive, appositive RC.

In Potts (2005), appositive relative clauses are argued to be supplementary expressions contributing a conventional implicature along a separate dimension of semantic composition. Supplementary expressions have some properties distinguishing them from the expressions that are part of the at-issue content. Below, I discuss the ones that are relevant to our case.

The most prominent difference is that supplementary RCs cannot restrict the head noun. In the context of (64), there are more than three eggs, and the RC modification restricts the denotation to the ones bought from the grocery store. However, in an appositive context,

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[28]In the head-raising analysis (Richard 1994), it is a complement of D, the antecedent noun being raised from the RC.

we would expect the existence of exactly three eggs. In fact, the derivation is compatible with both restrictive and non-restrictive contexts. If there are only three eggs in the context, *e-ident* will equate these eggs with the maximal eggs bought from the store, yielding a non-restrictive relativization.

In addition, supplementary expressions are subject to an anti-backgrounding effect, meaning that they do not repeat a backgrounded information, so they often introduce new information. As is clear in the context of (64), the content of the outer RC repeats the previously introduced information, showing that they do not pattern with conventional implicatures.[29]

Finally, supplementary expressions are independent because conventional implicatures are calculated independently from the at-issue meaning. One reflection of this is the fact that a quantifier in the matrix clause typically cannot bind a pronoun inside an appositive RC (e.g., Jackendoff 1977, Safir 1986, Demirdache 1991). Although it has also been noted that quantifier binding into appositive RCs is sometimes possible (e.g., Sells 1985, Kamp and Reyle 1993), the general consensus is to take such cases to be exceptions and explain how quantifier binding is banned in appositive RCs (e.g., Potts 2005 and Koev 2013). This issue remains controversial, but we can still use it as a case against the independence of Turkish outer RCs since a quantifier in the matrix clause can bind a pronoun in an outer RC without any restrictions. Imagine a context where three men donated some money to the poor relatives of some people. In (82), the outer RC+NC combination can refer to the three men who did the donation. The RC has the 3rd person possessive agreement marker, which is bound by the universal quantifier in the matrix clause.

(82)   Herkes$_i$ akraba-lar-ı$_i$-na   yardım ed-en üç   tane adam-ın
        everybody relative-PL-3SGPOSS-DAT help-AN   three CL   man-GEN
        ödüllendirilmesi-ni isti-yor.
        be.rewarded-ACC   want-PROG
        'Everybody wants (the) three men that helped their relatives to be rewarded.'

So, outer nominalized RCs that combine with an NC of type e with *tane* do not show the

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[29]However, see Chierchia and McConnell-Ginet (2000) for cases where appositive RCs must be backgrounded.

properties of supplementary/appositive RCs.

Before concluding this section, let us briefly see what happens when NCs without *tane* combine with outer RCs. Since *iota* type-shifting is freely available for them even if the RC reconstructs to its base position, they can be definite. In addition, there is nothing to prevent them from occurring with a nominalized outer RC via *e-ident* type-shifting, where the NC without *tane* is associated with either the choice function or *iota*.

In summary, we have seen that although NCs with *tane* are associated with a choice function variable, their combination with an outer RC can result in a definite interpretation. I have suggested that this is made possible by an outer nominalized RC combining with an NC of type e via *e-ident*, the result of which denotes a definite individual.

5.2   The Special Partitive Construction and *tane*

In the previous section, we have seen that otherwise indefinite NCs with *tane* can receive definite readings with outer RCs, which also makes them compatible with the distributive function of *dA*. There is one more construction type where *tane* unexpectedly becomes compatible with definiteness and therefore with the distributive *dA*.

This construction bears the partitive form which in Turkish is realized with genitive-possessive morphology (see von Heusinger and Kornfilt 2017). It differs from the regular partitive construction in that it is obligatorily followed by the particle *dA*. The presence of *dA* adds a distributive reading, which is accompanied by a maximality requirement. Therefore, although this construction has a partitive structure, semantically it is not partitive. I will call it *the special partitive construction* from now on. Consider the contrast between a regular partitive construction given in (83) and a special partitive construction given in (84).

(83)   Dolapt-tan dört (tane) elma çıkar-dı-m.   **(Elma-lar-ın) üç-ü/**
         fridge-ABL four CL   apple take.out-PAST-1SG apple-PL-GEN three-3SGPOSS
         üç   tane-si   masanın üstünde.
         three CL-3SGPOSS table   on
         'I took out four apples from the fridge. Three of the apples are on the table.'

(84) Dolapt-tan üç (tane) elma çıkar-dı-m.   **(Elma-lar-ın) üç-ü/**
      fridge-ABL three CL   apple take.out-PAST-1SG apple-PL-GEN three-3SGPOSS
      üç   tane-si   de masanın üstünde.
      three CL-3SGPOSS DA table   on
      'I took out three apples from the fridge. The three apples each are on the table.'

The puzzling issue here is how *tane* is possible in the special partitive construction. If this construction requires maximality, *tane* is expected to be incompatible with it due to its inherent indefiniteness (cf. (84) with (30b)). I suggest that the same explanation that we have adopted for the outer RC case applies here. Let us consider the details below.

The partitive construction is composed of two parts in English, an NP1 which often consists of only the determiner or numerals, and an NP2 accompanied by the preposition 'of':

(85)   two of these eight girls

It is semantically characterized as having certain conditions (Hoeksema 1996, Chierchia 1997, Barker 1998, Zamparelli 1998). NP2 must be definite or specific indefinite and this condition is called 'The Partitive Constraint' (Jackendoff 1977, Barwise and Cooper 1981, Ladusaw 1982, de Jong 1991, among others). Additionally, the expressed relation between NP1 and NP2 is a part-of relation, which Barker (1998) explains by claiming that 'of' returns a proper part of its complement. The motivation behind this is the anti-uniqueness associated with the partitive construction. A partitive cannot appear with a definite determiner unless it is modified (examples adopted from Ionin et al. 2006).[30]

(86)   a. I met the two of John's friends *(that you pointed out last night).

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[30]This is reminiscent of NCs with *tane*, which also cannot be definite unless modified by on outer RC, as we have discussed in the previous section. Both partitives and NCs with *tane* are associated with an anti-uniqueness effect, the latter of which we will discuss in Section 6. In both cases the RC modification overrides this effect. It is worth considering the case of English partitives along the analysis offered here for the case of *tane*. It seems to me that in (86a), the RC is not interpreted as low as the noun *friends*. Otherwise, it would restrict 'John's friends' to the ones 'that you pointed out last night', and the partitive construction would end-up with an anti-uniqueness effect, choosing two of them. Instead, it identifies the two friends among John's friends that I met. These two friends are equal to the ones you pointed out last night, suggesting that it should be interpreted above 'two of John's friends'. If this is on the right track, *e-ident* might be responsible for the definiteness, which is not derived otherwise.

b. *I met the two of John's parents.

On the other hand, Ionin et al. (2006) argue that 'of' actually returns an improper part of its complement, and that the anti-uniqueness effect is due to pragmatics rather than semantics. The two views are represented in (87).

(87) a. $\llbracket of \rrbracket = \lambda x \lambda y.\ y < x$ (Barker 1998)

b. $\llbracket of \rrbracket = \lambda x \lambda y.\ y \leq x$ (Ionin et al. 2006)

Syntactically, Ionin et al. (2006) propose that due to the atomicity requirement of cardinals, a partitive construction involving an NC as its NP1 has an empty/deleted singular noun taking the 'of' PP as its complement, as shown below.

(88)
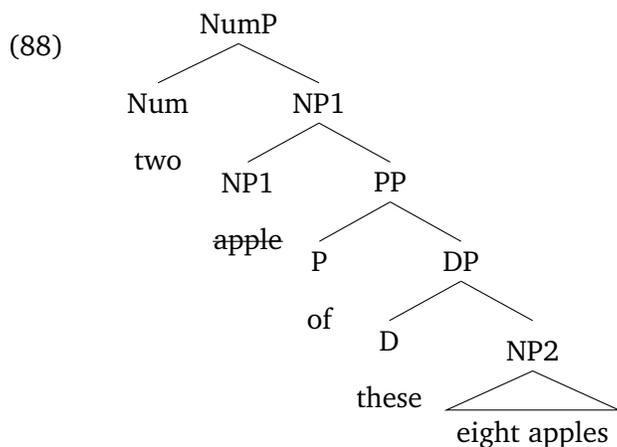
Adapting this view, I propose the following structure for the regular partitive construction in Turkish, where the NC is an indefinite. Since CardP is in the specifier position of the nominal projection in Turkish, the empty/deleted noun is licensed by D which bears the possessive agreement morpheme (cf. von Heusinger and Kornfilt 2017).

(89) a. elma-lar-ın üç-ü/   üç   tane-si
          apple-PL-GEN three-3SGPOSS three CL-3SGPOSS
          'three of the apples'

b. The Regular Partitive Construction with NCs
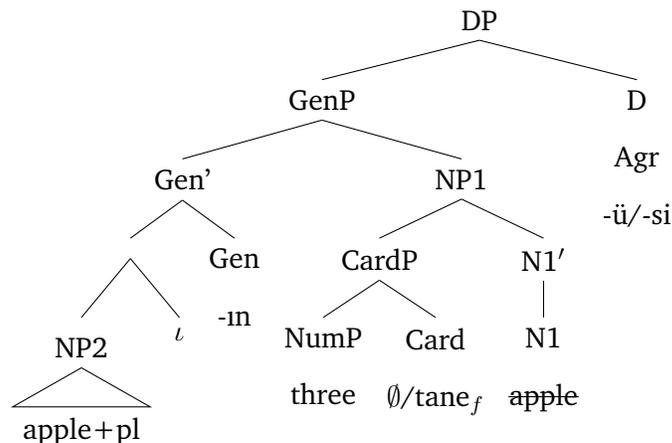
Due to the anti-uniqueness effect of the regular partitive construction, NCs with or without *tane* cannot be interpreted as definite when they take part in this construction, but instead they need to be indefinite. In a possessive construction, though, an NC without *tane* can yield a definite interpretation. This contrasts with an NC with *tane*, as shown in (90).

Context: Sevgi has two apples only.

(90)   Sevgi-nin iki (#tane) elma-sı-nı   Merve-ye   ver-di-m.
        Sevgi-GEN two CL   apple-3SGPOSS-ACC Merve-DAT give-PAST-1SG
        'I gave the two apples of Sevgi to Merve.'

It seems to be the case that the partitive semantics is responsible for the anti-uniqueness effect in (89a), given that both the possessive and partitive constructions are realized in genitive-possessive morphology. However, putting the issue of whether 'of' and *Gen* in the regular partitive construction return proper or improper parts aside, I propose that in the special partitive construction, *Gen* takes the role of *ident*, which takes an individual and turns it into the property true of that individual. In our case, it takes the definite plural *elma-lar* 'the apples', and turns it into the property of the maximal plural apple individual.

(91)   a. $[\![Gen]\!] = \lambda y \lambda x.\, x = y$

b. $\llbracket$ [[ι *apple*+*pl*] *Gen*] $\rrbracket = \lambda x.\ x = \iota z\ [apples(z)]$

When the special partitive construction occurs with NCs without *tane*, the $\langle e, t\rangle$ type expression denoted by the application of *Gen* to NP2 as in (91b) (*Gen′* below) and the $\langle e, t\rangle$ type expression denoted by the NC intersect via Predicate Modification, the result of which undergoes ι type-shifting, as shown below. Since ι is freely available for NCs without *tane*, this is an expected derivation. (92) denotes the unique individual that is equal to the maximal plural apple individual and that has the cardinality three.

(92)   The Special Partitive Construction without *tane*

$$\iota x\ [x = \iota z\ [apples(z)]\ \wedge\ \exists S\ [\textstyle\prod(S)(x)\ \wedge$$
$$|S| = 3 \wedge \forall s \in S\ apple(s)]]$$

$$\lambda x.\ x = \iota z\ [apples(z)]\ \wedge\ \exists S\ [\textstyle\prod(S)(x)\ \wedge$$
$$|S| = 3 \wedge \forall s \in S\ apple(s)]$$

ι

Gen′

$\lambda x.\ x = \iota z\ [apples(z)]$

$$\lambda x.\ \exists S\ [\textstyle\prod(S)(x)\ \wedge$$
$$|S| = 3 \wedge \forall s \in S\ apple(s)]$$

$$\lambda P_{AT} \lambda x.\ \exists S\ [\textstyle\prod(S)(x)\ \wedge$$
$$|S| = 3 \wedge \forall s \in S\ P(s)]$$

N1′

NumP   Card   N1

3                $\emptyset$ $\lambda x.\ apple(x)$

$$\lambda n \lambda P_{AT} \lambda x.\ \exists S\ [\textstyle\prod(S)(x)\ \wedge$$
$$|S| = n \wedge \forall s \in S\ P(s)]$$

In the case of the special partitive construction with NCs with *tane*, since ι is not available for it due to the built-in choice function variable, I propose the following composition in (93) where *e-ident* is responsible for the combination of NP2+Gen and the NC. (93) denotes the

unique individual that is equal to both the maximal plural apple individual and the plural

individual having the cardinality three which is selected by a choice function.

(93)   The Special Partitive Construction with *tane*

$$\iota y\ [y = \iota z\ [apples(z)] \land f(\lambda x.\ \exists S\ [\textstyle\prod(S)(x)\ \land$$

$$|S| = 3 \land \forall s \in S\ apple(s)]) = y]$$

Gen′

$$\lambda x.\ x = \iota z\ [apples(z)]$$

$$\lambda P.\iota y\ [P(y) \land f(\lambda x.\ \exists S\ [\textstyle\prod(S)(x)\ \land$$

$$|S| = 3 \land \forall s \in S\ apple(s)]) = y]$$

$$f(\lambda x.\ \exists S\ [\textstyle\prod(S)(x)\ \land$$

$$|S| = 3 \land \forall s \in S\ apple(s)])$$

e-ident

$$\lambda x \lambda P.\iota y\ [P(y)$$

$$\land x = y]$$

$$\lambda P_{AT}.\ f(\lambda x.\ \exists S\ [\textstyle\prod(S)(x)\ \land$$

$$|S| = 3 \land \forall s \in S\ P(s)])$$

N1'

NumP   Card   N1

3            $tane_f$ $\lambda x.\ apple(x)$

$$\lambda n \lambda P_{AT}.\ f(\lambda x.\ \exists S\ [\textstyle\prod(S)(x)\ \land$$

$$|S| = n \land \forall s \in S\ P(s)])$$
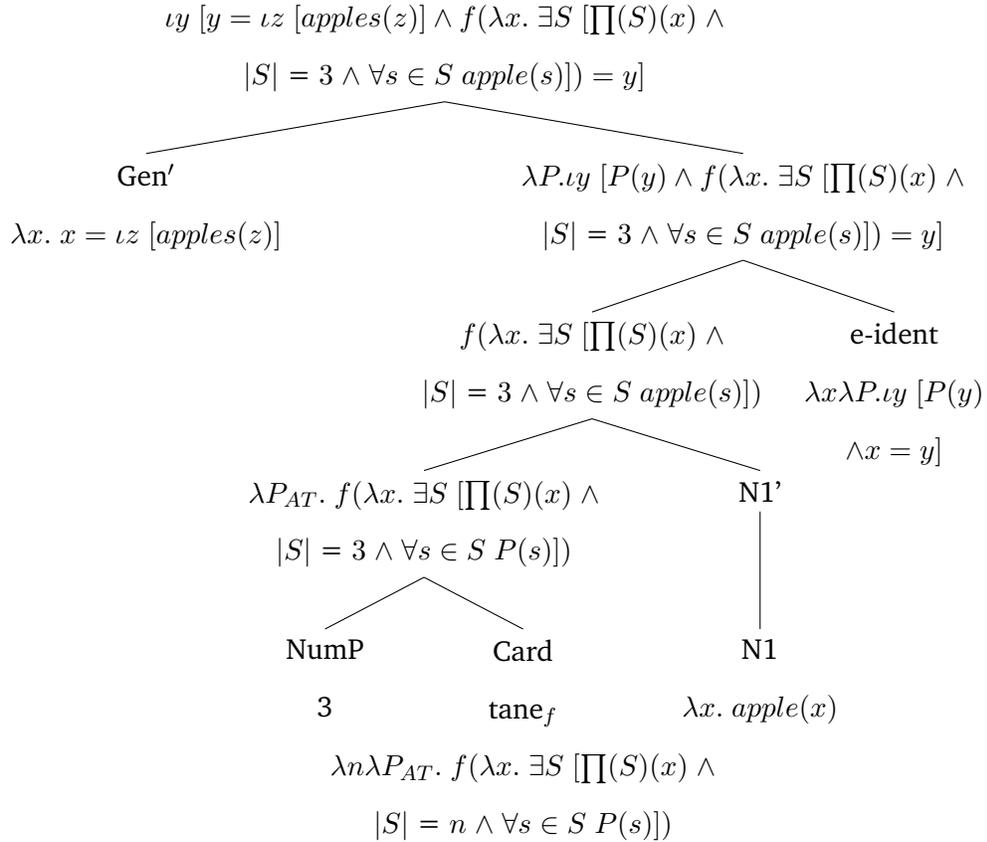
The interpretation of the combination of (92) and (93) with *dA* is given below, which is the

denotation of (84). I assume that the definite expressions derived in (92) and (93) equal

a⊕b⊕c.

(94) $\cap\{\{w: \text{on the table}_w(x)\} : x \in (a \oplus b \oplus c)^{AT}\}^{\downarrow}$

$$= \wp\ \{on\ the\ table_w(a)\} \cap \wp\ \{on\ the\ table_w(b)\} \cap \wp\ \{on\ the\ table_w(c)\}$$

Note that if the choice function were applied to NCs with *tane* after the whole NC is com-

posed rather than residing in the denotation of the classifier, we would expect NCs with

tane to be incompatible with the special partitive construction. This is because NP2+Gen of type $\langle e, t \rangle$ would combine with the $\langle e, t \rangle$ type NC, which in turn would combine with the choice function. There would be no way for the NC to get a definite reading, since ι is not available for it. In (93), since the NC with *tane* is already an expression of type e when it combines with NP2+Gen, *e-ident* is available making it a part of a definite expression. This indirectly makes it possible for the NC with *tane* to be a host for the distributive *dA*.

Before concluding this section, let us consider an alternative approach. We could take the special partitive construction to be a possessive construction and show that *tane* is not a measure function in this case, but a relational noun. In fact, *tane* has a relational noun denotation, as shown in (95).

(95)   a.   mısır tane-si
             corn seed-3SGPOSS
             'corn seed'

        b.   elma-lar-ın   tane-si
             apple-PL-GEN item-3SGPOSS
             'single item of the apples'

In (95a), *tane* refers to the smallest piece of a corn, i.e., a seed of it. In (95b), it refers to an atomic element that a plural individual possesses, and the numeral *bir* 'one' can be omitted. In both cases *tane* is a relational noun since it cannot be used on its own without the possessive construction.[31]

If the special partitive construction were in fact a possessive construction, then *tane* would occur as a relational noun and would not be associated with the choice function, making the definiteness possible with it. This cannot be the case, though. The relational noun denotation of *tane* is only compatible with inanimate and non-human nouns, but incompatible with human nouns, as shown in (96a). However, the special partitive construction can occur with human nouns, too, as shown in (96b).

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[31]The sentences in (95a) and (95b) represent possessive compounds and the genitive possessive construction, respectively. For details see Öztürk and Taylan (2016).

(96)   a. #çocuk-lar-ın tane-si
           child-PL-GEN item-3SGPOSS
           'single item of the children'

       b. Çocuk-lar-ın iki tane-si   de bir şişe süt iç-ti.
           child-PL-GEN two CL-3SGPOSS DA one bottle milk drink-PAST
           'Both of the children drank a bottle of milk.'

To wrap up, in this section, I have explored a possible analysis for how NCs with *tane* are compatible with the special partitive construction, receiving a definite interpretation, although they come with a built-in choice function variable. Following a similar line of logic proposed for the case of outer RCs, I have suggested that *Gen* takes the role of the *ident* operator in this construction, taking a definite plural individual and turning it into a property. This property, in turn, combines with an NC of type e with *tane* via *e-ident*, the result of which denotes a definite individual. Finally, this definite expression becomes a host for the distributive *dA*.

6   An Alternative Approach Eliminated

We have seen that NCs with *tane* can only be indefinite unless accompanied by an outer RC or occurring in the special partitive construction. We have attributed the behavior of these NCs to a built-in choice function variable in the semantics of *tane*, and seen that it is still possible for them to be a part of definite expressions still preserving their indefiniteness.

One other possible approach would be to claim that *tane* brings with it an anti-uniqueness presupposition while regular NCs do not have any presupposition. In this approach, NCs with *tane* would only be compatible with a choice function variable since the *iota* type-shifting would be eliminated by the anti-uniqueness presupposition.

There are two reasons why this analysis cannot be adopted. First of all, the competition of NCs with and without *tane* via Maximize Presupposition would always result in a uniqueness reading for NCs without *tane* which do not have any presupposition. In other words,

in the non-unique contexts Maximize Presupposition would favor the more informative alternative, NCs with *tane*, resulting in a uniqueness implicature for NCs without *tane*. NCs without *tane*, however, are equally compatible with non-unique domains.

Second and more importantly, the anti-uniqueness of *tane* does not seem to be a conventional presupposition, as the tests adopted from Sauerland (2008) show. According to these tests, which we will detail below, the anti-uniqueness of *tane* is an implicated presupposition as a result of a competition with a definite NC via Maximize Presupposition. An implicated presupposition results from a pair of two sentences S and S', of which S has a presupposition p that S' lacks.

This means that NCs with *tane* should not have any presupposition and it should be competing with a definite form. We know that definiteness is only available for NCs without *tane*. So, based on that NCs with *tane* compete with [ι num Card$_\emptyset$ noun], which presupposes existence of uniqueness. However, we also know that NCs without *tane* can also behave like the ones with *tane* in yielding anti-uniqueness effects. Then, let us assume that [num Card$_\emptyset$ noun] has also no presupposition and competes with [ι num Card$_\emptyset$ noun].

(97)   a.   [ι num Card$_\emptyset$ noun] $\rightarrow$ uniqueness presupposition

            b.   [num Card$_\emptyset$ noun] $\rightarrow$ no presupposition

            c.   [num tane noun] $\rightarrow$ no presupposition

Let us first eliminate the possibility that the anti-uniqueness of *tane* is a scalar implicature, examining how it interacts with negation.

(98)   Ali iki   (tane) balığ-a   yem ver-me-di.
         Ali two CL   fish-DAT food give-PAST-NEG
         'Ali didn't give food to two fish.'

If there were only two fish in the context, *tane* would be odd in (98), and the NC without it would yield a definite reading. The example conveys that there are more than two fish

in the domain, and Ali did not give food to two of them. (Alternatively, it could mean it is not the case that Ali gave food to two fish, Ali gave food to three fish, via scope ambiguity.) This is in line with the conventional anti-uniqueness presupposition.

Implicated presuppositions are like conventional presuppositions in projecting through negation because they are dependent on a presupposition of the competing element. Namely, the implicated presupposition of *tane* which is derived from the conventional uniqueness presupposition of [ι num Card$_\emptyset$ noun] in the unnegated version is also the same as the implicated presupposition of the negated sentence, because the conventional presupposition of [ι num Card$_\emptyset$ noun] does not change. On the other hand, scalar implicatures are reversed in the scope of negation and other downward entailing contexts, and (98) shows that the anti-uniqueness effect of *tane* is not a scalar implicature. However, given that both conventional and implicated presuppositions can project through negation, the negative contexts do not distinguish between the two.

Nevertheless, there are two ways to eliminate the hypothesis that the anti-uniqueness of *tane* is a conventional presupposition. The first test concerns the epistemic status of NCs with *tane*. If *tane* had an anti-uniqueness presupposition conventionally, it would project in the following case:

(99)   Robert iki   (tane) balığ-a   yem ver-di.
        Robert two CL   fish-DAT food give-PAST
        'Robert gave food to two fish.'

This sentence is good even if the exact number of fish in the area is not known. This stems from the following view: S' can only be used when the speaker knows that p is not satisfied. If the speaker does not know whether p is satisfied it follows that p is not satisfied. Therefore, the implicated presupposition of S' is that p is not certain. So, (99) is possible because the implicated presupposition of *tane* (or indefinite [num Card$_\emptyset$ noun]) ends up being that the uniqueness of the fish set is not certain. This distinguishes implicated presuppositions from conventional presuppositions and scalar implicatures, both of which

have a strong epistemic status.

The second way to test whether the anti-uniqueness of *tane* is a conventional presupposition is to see whether it can project through a universal quantifier. When *tane* interacts with a universal quantifier, we do not get an anti-uniqueness effect, which would be expected if it were a conventional presupposition. Consider a context where several candidates applied. Some have written only two books, some have written more than two books. The selection committee knows exactly who has written how many and the decision is as follows:

(100) Herkes   iki (tane) kitab-ı-nı   yolla-sın.
       everybody two CL   book-3POSS-ACC send-3SGIMP
       Everybody should send two books of his/her.

The sentence in (100) has the implicated presupposition that not every candidate has written exactly two books. Conventional presuppositions project universally, i.e., $\forall(x)P(x)$, P being the uniqueness presupposition of $[\iota$ num Card$_\emptyset$ noun$]$ in our case. Hence, the corresponding implicated presupposition is $\neg\forall(x)P(x)$ or $\exists(x)\neg P(x)$.

So, based on these tests, the anti-uniqueness of *tane* is an implicated presupposition, derived by a competition with $[\iota$ num Card$_\emptyset$ noun$]$ which has a uniqueness presupposition.

In that case, we could explain the fact that NCs with *tane* receive definiteness when they combine with outer RCs assuming that the competition between $[\iota$ num Card$_\emptyset$ noun$]$ and *tane* occurs locally, at the level of the noun before the RC reconstructs. However, this would still leave the case of the special partitive construction unexplained.

Nevertheless, there is evidence that the competition cannot occur locally in Turkish, in the first place. If this were possible the implicated presupposition of *tane* in (100) would be such that for everyone there are more than two books that they have written, emerging under the scope of the universal quantifier. The interpretation received, though, is such that some people have written exactly two books, while some people have written more than two books, showing that the competition occurs at the sentence level.

In conclusion, the anti-uniqueness effect of NCs with *tane* is not a conventional, but an implicated presupposition that emerges as a result of its competition with definite NCs without *tane* via Maximize Presupposition. Therefore, we cannot explain the incompatibility of NCs with *tane* with *iota* type-shifting, by the anti-uniqueness effect associated with it. In addition, reducing the definiteness of NCs with *tane* when they are modified by outer RCs to a local competition based approach would face empirical problems, and therefore cannot be adopted.

7 Further Issues

In this section, I discuss two more issues regarding the classifier *tane*. I will first investigate further data supporting my take on the structure of NCs with *tane*. I will then discuss the differences between NCs with and without *tane* when they occur with the numeral *bir* 'one'. I will not offer full-fledged explanations for these cases, but they are intended to inspire further research.

7.1 More on the Structure of NCs with *tane*

I have argued that NCs with or without *tane* are headed by the noun, and the CardP is merged inside the nominal projection, as represented below.

(101)   The structure of NCs in Turkish
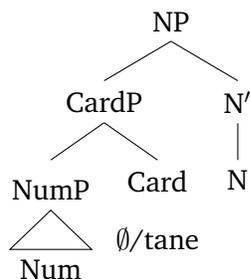
In Section 4 of the previous chapter, I have stated the following reason for this: The cardinal

head, whether it is covert or realized overtly as *tane*, cannot license a deleted noun, which would be expected if it took the NP as its complement. The relevant example showing this case is repeated below. Notice that here the ablative partitive construction receives the accusative case marker.

(102)   *Bana (elma-lar-dan) **iki (tane)** ~~elma~~-yi   ver-ir   mi-sin?
            to.me apple-PL-ABL   two CL   apple-ACC give-AOR QUEST-2SG
            'Can you give me two (from the apples)?'

However, there are two other cases where the noun is deleted as in (102) but this time the presence of *tane* results in grammaticality. These are the predicate position and the non-case marked ablative partitive construction. (103) exemplifies NCs without *tane* and (104) exemplifies NCs with *tane* in these cases.

(103)   a. *Masa-da-ki elma-lar **iki** ~~elma~~-y-di.
               table-LOC-KI apple-PL two apple-COP-PAST
               'The apples on the table were two.'

        b. *Bana (elma-lar-dan) **iki** ~~elma~~ ver-ir   mi-sin?
               to.me apple-PL-ABL   two apple give-AOR QUEST-2SG
               'Can you give me two (out of the apples)?'

(104)   a. Masa-da-ki elma-lar **iki tane** ~~elma~~-y-di.
               table-LOC-KI apple-PL two CL   apple-COP-PAST
               'The apples on the table were two.'

        b. Bana (elma-lar-dan) **iki tane** ~~elma~~ ver-ir   mi-sin?
               to.me apple-PL-ABL   two CL   apple give-AOR QUEST-2SG
               'Can you give me two (from the apples)?'

One could argue that *tane* licenses the deleted nouns in (104a) and (104b) (Sağ 2018). However, the fact that the form *iki tane* is not good when followed by a case marker goes against this idea, unless we stipulate some reasons why it could be incompatible with it.[32]

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[32]In Section 5.2, we have seen that in the genitive partitive construction, NCs with and without *tane* are good without an accompanying noun, which, following Ionin et al. (2006), I have assumed to be realized in the deleted form. The genitive partitive construction is different from the ablative one in having the possessive agreement morpheme on the numeral or numeral+*tane*. Following von Heusinger and Kornfilt (2017), I have

von Heusinger and Kornfilt (2017) argue that *tane* in the ablative partitive construction takes on the role of a semantically bleached out noun. They further assume that it is inherently non-specific, hence incompatible with the specificity signaled by accusative case marker. First of all, it is not only the accusative case marker, but all other case markers that are incompatible with *tane* in this case. Second, in (104b) the interpretation is still specific due to the partitive context, and yet *tane* can occur in this construction, yielding the reading of 'any two from the set of apples.' One can argue, then, that this free-choice reading is what makes *tane* compatible with the partitive construction, where it still retains the alleged inherent non-specificity. However, this cannot be the case either as evidenced by the following contrast:

(105)   a.   Bana (elma-lar-dan) herhangi **iki tane**(*-yi) ver-ir   mi-sin?
             to.me apple-PL-ABL any   two CL-ACC   give-AOR QUEST-2SG
             'Can you give me any two (from the apples)?'

        b.   Bana (meyve-ler-den) herhangi **iki   tane elma**(-yı) ver-ir   mi-sin?
             to.me fruit-PL-ABL   any   two CL   apple-ACC give-AOR QUEST-2SG
             'Can you give me any two apples (from the fruits)?'

In (105a), the free choice item *herhangi* is used, which could be either accompanied by the accusative case marker or not. As is clear in (105b), where an overt noun is used in the partitive construction, the addition of the accusative case marking does not add a meaning difference. Yet (105a) is bad when *tane* is followed by the accusative case marker.

The problem of *tane* in these cases seems to be more of a structural issue. NCs with *tane* can occur without an overt noun only in the predicate position, as in (104a) or in the immediate pre-verbal position without receiving case marking, as in (104b). Since *tane* cannot license a deleted noun, as suggested by the cases where they occur in case-marked argument positions, I propose that in the predicate position and in the caseless pre-verbal position, CardP with the overt *tane* occurs with an intransitive, $\langle e, t \rangle$ type denotation, and

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argued that the agreement marker occupies D, so it can license the deleted noun. von Heusinger and Kornfilt also show that the ablative form can be followed by the agreement marker, in which case, both the numeral and numeral+*tane* are grammatical, e.g., *elma-lar-dan iki-si-ni/iki tane-si-ni verir misin?* 'Can you give me two out of the apples?'

there is no deleted noun to be licensed.

In fact, these two positions are similar in hosting indefinites in their predicative denotation. This is obviously the case in the predicate position (e.g., *John is a child.*), and could be argued for the pre-verbal position, as well. Recall that in Chapter 3, I have introduced caseless indefinites occurring in the pre-verbal position and showed that they take narrow scope with respect to other quantificational elements. In Section 2.1.1 of the current chapter, I have discussed the possibility that caseless indefinite objects are situated inside the VP introducing variables in the sense of Heim (1982), where they are existentially closed locally (Diesing 1992, Kennelly 1994, Zidani-Eroğlu 1997, and Kelepir 2001.)

It can be argued that caseless ablative partitives with *tane* are subject to the same restriction, yielding narrow scope interpretations, as exemplified in (106b). Compare it with (106a) which has a caseless indirect object.

(106)   a.   Herkes   bir kitap oku-du.
             everybody one book read-PAST
             'Everybody read a book.' (**every** > **a**)

        b.   Herkes   kitap-lar-dan iki   tane oku-du.
             everybody book-PL-ABL two CL   read-PAST
             'Everybody read two out of the books.' (**every** > **two**)

The next question is how the intransitive denotation of NCs with *tane* is derived. It could be derived from its transitive denotation by existentially closing its nominal argument, or directly positing an intransitive semantics as an ambiguity. This also holds for measure expressions like *iki kilo* 'two kilos', and Scontras (2014) argues that the intransitive denotation of measure expressions headed by a measure term is always derived from their transitive denotation. The motivation behind this is the conceptual association of measure terms with the substance to be measured. In other words, *kilo* is always a kilo of something and it cannot have an independent meaning without the substance that it will measure. Sharing his intuitions we can apply this view to the cardinality measure term, *tane*, as well, representing its intransitive denotation as in (107). The structure and the denotation of the ablative

construction with an intransitive NC with *tane* is shown in (108), assuming for convenience that the ablative introduces an improper part relation, as claimed by Ionin et al. (2006).[33]

(107) $[\![2\ tane]\!] = \lambda x.\ \exists P_{AT}\exists S\ [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S\ P(s)]$

(108) $\lambda x.\ \exists P_{AT}\exists S\ [\prod(S)(x)\ \wedge\ |S| = 2 \wedge \forall s \in S\ P(s) \wedge x \leq \iota y[apples(y)]]$

$\lambda x.\ x \leq \iota y[apples(y)]$ CardP

     2 tane

$\iota y[apples(y)]$ Abl $\lambda x.\ \exists P_{AT}\exists S\ [\prod(S)(x) \wedge$

   -dan $|S| = 2 \wedge \forall s \in S\ P(s)]$

NP ι $\lambda y\lambda x.\ x \leq y$

apple+pl

$\lambda y.\ apples(y)$

Notice, however, that such a solution does not explain why the covert cardinal head does not have an intransitive denotation on a par with NCs with *tane*, occurring in predicate and pre-verbal positions without an accompanying noun. In addition, we need to stipulate that the intransitive denotation of NCs with *tane* is only available in these predicative positions, but not in case-marked argument positions. I leave these issues as open questions.

To sum up, I have adopted the view that NCs with or without *tane* are headed by the noun. I have shown that *tane* cannot license a deleted noun like the covert cardinal head, which is observed in the case-marked argument positions. The grammaticality of it without an overt noun in the predicate position and the pre-verbal caseless position is reduced to the intransitive denotation of NCs with *tane*.

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[33]Note that *tane* does not bear a choice function variable on it in this case. To repeat, in the non-case marked argument positions all indefinites in Turkish introduce a variable that is locally existentially closed in the sense of Heim (1982), therefore they are restricted to narrow scope readings only. The association with the choice function variable only happens in case-marked argument positions, where we observe freedom in the scope-taking abilities of indefinites in general.

7.2 *bir N* vs. *bir tane N*

The indefinite article *a/an* of English is argued to be historically derived from the numeral *one* (Perlmutter, 1970), and in many languages like Hindi (Dayal 2004b) and Russian (Geist 2010) that lack an indefinite marker, indefiniteness is achieved by the numeral *one*. However, even if the numeral takes the role of the indefinite determiner in these languages, it is distinct from indefinite determiners. There are two diagnostics that differentiate between the two, as discussed in Kratzer (1998), Chierchia (1998b), and Dayal (2004b).

Indefinite determiners take neutral narrow scope under negation and they can occur in generic statements, as shown in (109a) and (109b). In addition, it is possible for indefinites to get quantificational readings, as shown in (109c).

(109)   a.   I didn't buy a book.

b.   A dog barks.

c.   A dog usually eats meat.

(109a) is compatible with no books being bought, where the indefinite takes neutral narrow scope under negation. In (109b), the barking property applies to all/most members of the dog species, showing that an indefinite form can become a restrictor to the Gen operator. In (109c), the most salient reading is that most dogs eat meat.

In contrast, indefinites with the numeral *one* do not have these properties. They do not yield a neutral narrow scope reading under negation, but an emphatic one. For example, (110a) means that *I did not buy even one book*. In addition, in generic contexts, the only interpretation available for them is the numerical reading of *one*, which makes them infelicitous in contexts where the numeral information is not relevant, as in (110b). Finally, they result in infelicity in the quantificational contexts, as shown in (110c). Below, I represent these by the English numeral *one*, but the facts hold for Hindi and Russian, as well.

(110)   a.   I didn't buy one book.

           b.   #One dog barks.

           c.   #One dog usually eats meat.

Turkish also lacks an indefinite determiner, and the *a/an* indefinites are formed by the unstressed numeral *bir*, which I call *bir*-indefinites. Indefinites formed by the combination of the unstressed *bir* and *tane* can also receive the meaning of *a/an*, as exemplified in (111).

(111)   Bir (tane) adam gel-di,   sen-i   sor-du.
            one CL   man come-PAST you-ACC ask-PAST
            'A man came. He asked for you.'

Intriguingly, *bir*-indefinites depart from their numerical meaning where *bir* typically receives stress and indefinites formed by the combination of *bir* and *tane* in terms of the three diagnostics presented above.

To begin with, *bir*-indefinites behave on a par with *a/an* indefinites of English in that they take neutral scope under negation, not an emphatic one. The emphatic reading is achieved when *bir* receives stress, to yield numerical information, and when it is accompanied by *tane*. Consider the following contrast:

(112)   a.   Şu anda   bu oda-da   bir fare   yok.
                that moment this room-LOC one mouse absent
                'There is no mice in this room right now.'

                bir stressed: 'There is not even a single mouse in this room right now.'

           b.   Şu anda   bu oda-da   bir tane fare   yok.
                that moment this room-LOC one CL   mouse absent
                'There is not even a single mouse in this room right now.'

Second, *bir*-indefinites can be restrictors to the Gen operator. However, it is not as freely available as in English, but they need some kind of an overt restriction to become felicitous in generic contexts, as shown in (113).

(113)　　a.　*Bir　köpek havla-r.
　　　　　　　one dog　　bark-AOR
　　　　　　　'A dog barks.'

　　　　　b.　Bir　köpek, eğer aç-sa,　　　havla-r.
　　　　　　　one dog　　if　　hungry-COND bark-AOR
　　　　　　　'A dog barks if hungry.'

Finally, they can get quantificational readings, as exemplified in (114).

(114)　　Bir　köpek genellikle/nadiren et　　ye-r.
　　　　　one dog　　usually/rarely　　　meat eat-AOR
　　　　　'A dog usually/rarely eats meat.'

On the other hand, the *bir tane* form behaves like the numeral *one* in English with respect to these diagnostics. It yields emphatic narrow scope under negation, as shown in (112) above. It is not compatible with generic contexts unless the number information is salient, as shown in (115), and it does not receive quantificational readings, as shown in (116). This is also the case for the stressed *bir* form.

(115)　　a.　#Bir　tane köpek, eğer aç-sa,　　　havla-r.
　　　　　　　one CL　dog　　if　　hungry-COND bark-AOR
　　　　　　　'A dog barks if hungry.'

　　　　　b.　Bir　tane köpek havla-r,　iki　tane köpek saldır-ır.
　　　　　　　one CL　dog　　bark-AOR two CL　　dog　　attack-AOR
　　　　　　　'One dog barks, two dogs attack.'

(116)　　#Bir　tane köpek genellikle/nadiren et　　ye-r.
　　　　　one CL　dog　　usually/rarely　　　meat eat-AOR
　　　　　'A dog usually/rarely eats meat.'

In addition to these diagnostics, I add the following contrast between *bir*-indefinites and *bir tane*-indefinites. While the former can occur in the predicate position with a meaning like *a/an* indefinites of English, the latter can only yield numerical information in this position. The contrast is given in (117). Again, the stressed *bir* patterns with the *bir tane* form.

(117) a. Ali henüz bir (#tane) çocuk.
        Ali still   one CL   child
        'Ali is still a child.'

     b. Ben-im al-dığ-ım   ödül bir (tane) kitap-tı   sadece.
        I-GEN   take-REL-1SGPOSS award one CL   book-PAST only
        'The gift that I received was only one book.'

How do these difference between *bir*-indefinites and *bir tane*-indefinites fit into our analysis? What seems to be the case is that *bir*-indefinites are in a spectrum, being closer to *a/an* indefinites of English. However, they still preserve the effects of numeral semantics, being relatively more restricted in generic contexts, as opposed to their English counterparts. On the other end of the spectrum is the strong numerical interpretation, and the stressed *bir* and *bir tane*-indefinites are closer to this end patterning with their kin in Hindi and Russian. Turkish interestingly reveals itself as sharing properties with languages with and without overt determiners, as is the case with the definiteness/indefiniteness of its NCs.

Although this issue is definitely an open question, it is plausible to assume that the language-internal disparity in Turkish may be related to the overt realization of the cardinality measure function realized by *tane*. I believe that the cardinality information is emphasized in the case of *bir tane*, which makes it easier for it to be reduced in the absence of *tane* through the unstressed form, yielding more of *a/an* type of behavior.

To summarize the discussion so far, we have seen that the presence of *tane* creates semantic differences, restricting NCs with it to indefinite interpretations only. To be able to account for this exclusively indefinite behavior, I have argued that NCs with or without *tane* have a predicative denotation, but in the presence of *tane,* they also have an independent argumental denotation, achieved by a choice function variable built into *tane* itself. While this gives freedom to NCs without *tane* in terms of definite vs. indefinite readings, it restricts the form with *tane* to indefinite interpretations only.

In the rest of this chapter, we will examine WA and Persian classifiers and see that their presence also creates meaning differences, but in distinct terms.

8 The (In)definiteness of Western Armenian and Persian Classifiers

As briefly discussed in Section 3, NCs in every language can freely receive indefinite readings. In some languages they can also be definite, but in some others they cannot. In languages like English that have an overt definite article, NCs can typically be definite by combining with this article. Intriguingly, bare NP languages typically do not allow their NCs to be type-shifted by *iota*, though some other overt elements, like demonstratives, make it possible for them to be used as definites. Chinese, an obligatory CL language, and Russian, a language without classifiers, are such languages (Jiang 2012, Bošković 2005).

We have seen that Turkish, as a bare NP language, is in between these two groups of languages. On the one hand, it allows its NCs without *tane* to be interpreted as indefinite but also as definite via *iota*-type shifting. On the other hand, its NCs with *tane* are devoid of *iota* type-shifting, but compatible with demonstratives. In this way, NCs without *tane* group with English NCs, and NCs with *tane* group with NCs in bare NP languages. The latter cannot be reduced to a cross-linguistic factor linked to classifier languages since having only indefinite NCs rather seems to be a property of bare NP languages in general. As the discussion to follow shows, it is not inherent to optional classifier languages, either.

I will now survey the (in)definite status of WA and Persian NCs with and without the classifier. In WA both forms of NCs can be indefinite, but they can also be definite through the definite article. In Persian, both forms can be indefinite and definite via *iota* type-shifting, though NCs with the classifier need overt markers/supporters for this. These facts demonstrate that the indefiniteness of *tane* does not follow from the optional classifier system.

8.1 Western Armenian *had*

As shown in the previous chapter, the classifier *had* is optional, and NCs with and without *had* can receive the plural marker in Beirut WA, which turns them into specific indefinites. In Istanbul WA, *had* cannot co-occur with the plural marker, which is also preferably omitted in the absence of it, still making the specificity possible. The relevant data is repeated below.

(118)   jerek (had) havgit
        three CL   egg
        'three eggs'

(119)   a. g-uz-em   jergu (had) piɣ   desn-el kazananot͡s-i-n met͡ʃ
           INDC-want-PRES1SG two   CL   elephant see-INF zoo-GEN-DEF   inside
           'I want to see two elephants in the zoo.' (**want** > **two**)

        b. g-uz-em   jergu (had) piɣ(%-er)   desn-el kazananot͡s-i-n met͡ʃ
           INDC-want-PRES1SG two   CL   elephant-PL see.INF zoo-GEN-DEF   inside
           'I want to see two elephants in the zoo.' (**two** > **want**)

The specific reading added by the plural marker is also evidenced by the ability of NCs bearing it to take scope out of the conditionals, as shown in (120).

(120)   a. jete im hənt͡ʃujnapanutjan tas-e-s   **jergu (%had) aʃagerd-ner**
           if   my phonology.GEN   class-ABL-1SGPOSS two CL   student-PL
           okn-es-ne   irent͡s proʒekt-i-n   met͡ʃ, ku
           help-PRES2SG their project-GEN-DEF/3PLPOSS in-DEF your
           niʃ-er-ət   gə-part͡srat͡sən-em.
           grade-PL-2SGPOSS INDC-raise-PRES1SG
           'If you help two students from my phonology class in their final project, I will

           increase your grades.' (**two** > **if**)

        b. jete im hənt͡ʃujnapanutjan tas-e-s   **jergu (had) aSagerd**
           if   my phonology.GEN   class-ABL-1SGPOSS two CL   student
           okn-es-ne   irent͡s proʒekt-i-n   met͡ʃ, ku
           help-PRES2SG their project-GEN-DEF/3PLPOSS in-DEF your
           niʃ-er-ət   gə-part͡srat͡sən-em.
           grade-PL-2SGPOSS INDC-raise-PRES1SG
           'If you help two students from my phonology class in their final project, I will

           increase your grades.'

           (Beirut WA: **if** > **two**, **# two** > **if**, Istanbul WA: **if** > **two**, **two** > **if**)

Both forms of NCs can receive the definite marker -ə in Beirut and Istanbul WA, obligating the plural marking on the noun in Beirut WA. In Istanbul WA, it occurs with the singular form, but in NCs without *had* the plural marker can optionally co-occur with the definite

marker only if the noun is animate.[34] The variation is roughly represented in (121).

(121)   a.   jerek (had) havgit un-im
             three CL   egg   have-PRES1SG
             'I have three eggs.'

        b.   jerek (had) havgit(%-ner)-ə un-im
             three CL   egg-PL-DEF   have-PRES1SG
             'I have the three eggs.'

However, as is clear from the contrast between (122) and (123), the co-occurrence of *had* with the definite marker leads to awkwardness when the noun is animate for the speakers of Beirut. This is observed in both anaphoric and uniqueness contexts accompanied by a relative clause modification. I have not encountered an animacy effect with the definite marker occurring with NCs in Istanbul WA.

(122)   a.   dup-i-n   met͡ʃ-ə   ga-r   jerek had kirk, meg had dedrag,
             box-GEN-DEF inside-DEF exist-PAST3SG three CL   book one CL   notebook
             jev jergu had madid. **jerek (had) kirk(%-er)-ə** im bəzdig
             and two CL pencil three CL   book-PL-DEF my little
             zarmig-i-s   dəv-i.
             cousin-DAT-1SGPOSS gave-PAST1SG
             'There were three books, one notebook, two pencils in the gift box. I gave

             the three books to my little cousin.'

(123)   Beirut WA

        a.   jerp jes tasaran-ə   məd-a,   usut͡sit͡ʃ mə   jev jergu manug
             when I   classroom-DEF enter-PAST1SG teacher INDEF and two   child
             ga-jin.   usut͡sit͡ʃ-ə   kirk mə   gə-gart-ar-gor,   pajt͡s
             exist-PAST3PL teacher-DEF book INDEF INDC-read-IMPERF3SG-PROG but
             jergu (??had) manug-ner-ə filim mə   gə-tide-jin-gor
             two   CL   child-PL-DEF film INDEF INDC-watch-IMPERF3PL-PROG
             'There were two kids, and a teacher in the classroom when I entered there.

             The teacher was reading a book, but the two kids were watching a movie.'

---

[34]Only one speaker from Istanbul judged the co-occurrence of the plural marker with definite NCs without *had* ok, though not perfect, in the case of inanimate nouns. One speaker completely rejected the co-occurrence of the plural marker with definite NCs.

b. **jerek (??had) mart-er-**ə vor jereg Suka-ji-n met͡ʃ
 three CL man-PL-DEF that yesterday store-GEN-DEF inside-DEF
 des-ank, ajsor t͡ʃerpagalv-et͡s-an
 see-PAST1PL today arrest-PAST-3PL
 'The three men that we saw in the shopping mall yesterday got arrested today.'

I do not have an explanation why animacy plays a role in the definite interpretation of NCs with *had* for the speakers of Beirut. Notice that this is not related to the plural marker since it can appear in NCs with *had* regardless of the (in)animacy of the noun in the absence of the definite marker. This is also independent of *had* itself since it is compatible with animate nouns in indefinite contexts. As for Istanbul speakers, the fact that definite NCs occur without the plural marker, accepting it optionally only in the case of an animate noun in the absence of *had*, also remains as an open question. However, it should be noted that since even in specific indefinite contexts, they preferably omit it, the plural marking might be disappearing from the NCs of Istanbul WA all together. I believe that this is most probably an effect of contact with Turkish.

To wrap up, disregarding the variation between Istanbul and Beirut speakers, what this data shows clearly is that NCs with the classifier can be definite, suggesting that the indefiniteness of *tane* in Turkish could not really be related to the nature of optional classifiers.

8.2 Persian *tā*

In the previous chapter, we have seen that although Persian is an optional classifier language, the omission of the classifier signals a more formal register contrary to the case in Turkish and WA, where the form without the classifier can be considered to be the default form. Nevertheless, the facts of Persian shed light on the nature of optional classifiers since they give us a good opportunity to compare *tane* with the optional classifier of another bare NP language. Let us recall the facts of Persian NCs: First of all, the relevant example of NCs with and without *tā* is repeated below.

(124) se   (tā) toxm-e morgh
       three CL   egg
       'three eggs'

Expectedly, both forms of NCs can be used as indefinites. However, due to being limited to formal contexts only, I believe, NCs without *tā* are judged to be awkward when a specific interpretation is intended. On the other hand, both specific and non-specific readings are easily available for NCs with *tā*. Consider the following contrast in (125).

(125) Age tu kelās-e man be do   (tā) dāneshju komāk kon-i, be nomra-t
       if in class-EZ I   to two CL student help-2SG   to grade-2SGPOSS
       ezāfe   mi-kon-am.
       increase IMPERF-do-1SG
       'If you help two students in my class, I will increase your grade.'

       (with *tā*: **two** > **if** or **if** > **two**)

       (without *tā*: ?**two** > **if** or **if** > **two**)

NCs with *tā* cannot be definite unless accompanied by the plural agreement on the noun, demonstratives, or the uniqueness marker *-(h)e/a*, as shown in (127) and (128). However, NCs without *tā* can marginally be definite, though the speakers prefer to use them with demonstratives. Additionally, the plural or uniqueness markers are not an option for them, as shown in (129). The sentences in (127), (128), and (129) are intended to follow the sentence in (126).

(126) Do tā moallem, se   tā mohandes, va ye doktor vāred-e   otāgh shod-an.
       two CL teacher   three CL engineer   and a doctor inside-EZ room become-3PL
       'Two teachers, three engineers, and a doctor entered inside the room.'

(127) **Do tā moallem*(-hā)** dar mored-e ye chiz-i   sohbat
       two CL teacher-PL   about-EZ   a thing-INDEF conversation
       mi-kard-an.
       IMPERF-PAST.do-3PL
       'The two teachers were talking about something.'

(128) **(Un) do tā moallem(?-e)** dar mored-e ye chiz-i sohbat
that two CL teacher-UM about-EZ a thing-INDEF conversation
mi-kard-an.
IMPERF-PAST.do-3PL
'Those/The two teachers were talking about something.'

(129) **?(Un) do moallem(*-e/*-hā)** dar mored-e ye chiz-i sohbat
that two teacher-UM-PL about-EZ a thing-INDEF conversation
mi-kard-an.
IMPERF-PAST.do-3PL
'Those/The two teachers were talking about something.'

The reason that the uniqueness marker is not compatible with NCs without tā might be due to a conflict between them being a formal usage and the uniqueness marker being a highly colloquial usage. As for the compatibility of the plural marker with NCs with tā but not NCs without tā, it is not obvious whether the uniqueness marker is present when an NC is inflected by the plural marker. It could well be the case that it is fused into the plural morpheme, so whenever there is a plural inflection the uniqueness marker might not be visible. If this is the case, then that could explain why the plural agreement which comes with the colloquial uniqueness marker in it does not occur with the formal NC form.

What is this uniqueness marker of Persian? Jasbi (2019b) claims that it introduces a uniqueness implication on the nominal it modifies. It can appear both with bare nouns and indefinites, as exemplified below (Jasbi 2019b, pg. 4 & 7).

(130) māshin(-e) xarāb shod-e.
car-UM broken become.PAST-3SG
'The car broke down.'

(131) a. Amir mi-xād bā **ye doxtar** ezdevāj kon-e.
Amir IMPERF-want-3SG with a girl marry do-3SG
'Amir wants to marry a girl.' (**want** > ∃ or ∃ > **want**)

b. Amir mi-xād bā **ye doxtar-e** ezdevāj kon-e.
Amir IMPERF-want-3.SG with a girl-UM marry do-3SG
'There is a girl Amir wants to marry.' (∃ > **want**)

Jasbi claims that when it appears on a bare noun, the uniqueness implication of *-(h)e/a* ensures a definite interpretation. When it appears with indefinites, it restricts the domain of quantification to a singleton set, making the indefinite scopally inert (in the sense of Schwarzschild 2002). Jasbi (2019b) shows this by the intermediate scope contexts, where indefinites marked with *-(h)e/a* always takes the widest scope.

Jasbi also claims that the uniqueness implication conveyed by *-(h)e/a* is not affected by entailment cancelling operators such as the antecedent of conditionals, therefore it is enforced globally. Second, he claims that the contribution of *-(h)e/a* is not a presupposition, since it does not require a common ground that presupposes the uniqueness of the nominal description, and it can be used to introduce new information. To capture these, he adopts Potts's (2005) two dimensional system and analyzes the uniqueness implication of *-(h)e/a* as a conventional implicature.

Ignoring the details regarding the status of the uniqueness implication of *-(h)e/a* and how it is derived, Jasbi's semantics of a definite bare noun inflected by the uniqueness marker can be represented as below (Jasbi 2019b, pg. 13):

(132) a. $\llbracket m\bar{a}shin - e \rrbracket = \lambda x.\ car(x) \wedge |car| = 1$

  b. $\llbracket \iota\ m\bar{a}shin - e \rrbracket = \iota x\ [car(x) \wedge |car| = 1]$

Based on this analysis, NCs with *tā* occurring with the uniqueness marker still need to undergo *iota* type-shifting. In addition, regardless of whether the plural marking comes with the uniqueness marker or not, *iota* type-shifting is necessary to derive definite NCs when they are inflected with the plural marker.

So, unlike Turkish NCs with *tane*, NCs with *tā* can undergo *iota* type-shifting. However, this does not occur without overt supporters/markers. This is intriguing since bare nouns can still be definites without the uniqueness marker, therefore it cannot be due to a potential blocking effect of overt alternatives. On the other hand, like Turkish, its NCs without the classifier has the capability to be definite directly by *iota* type-shifting. Therefore, Persian's

status in the big picture of definiteness/indefiniteness of NCs cross-linguistically is unclear.

To sum up, the (in)definiteness status of NCs in the three optional classifier languages, i.e., Turkish, WA, and Persian, is regulated by language-internal factors.

9   Conclusion

This chapter has aimed to examine to what extent optional classifiers have an "optional" status. We have seen that the presence of *tane* restricts NCs to indefinite interpretations only, though in its absence, NCs can be interpreted as definite, too. I have argued that this disparity stems from a built-in choice function variable that *tane* is associated with when NCs it resides in occur in argument positions. In contrast, NCs without *tane* are freely associated with *iota* type-shifting or a choice function variable introduced at D. We have also discussed two cases where NCs with *tane* can be interpreted as definite despite their inherently indefinite status. The first emerges when they are modified by outer relative clauses, and the other emerges when they are a part of the special partitive construction. I have offered analyses for these cases without compromising the indefiniteness of *tane*.

In this way, NCs with *tane* pattern with NCs of bare NP languages, which typically are not type-shifted by *iota* to yield definite readings, while being compatible with overt determiners. On the contrary, NCs without *tane* behave more like NCs of languages with an overt definite article, like English, which can either be definite via *the* or indefinite without overt marking. Of course, NCs without *tane* differ from English NCs in undergoing *iota* type-shifting for definiteness.

The investigation of WA and Persian classifiers, though, has shown that there is considerable variation with respect to the (in)definiteness of NCs with and without the classifier in these languages. Although I have remained agnostic on the reasons for these variations, what the discussion of Persian and WA NCs shows us is that the indefiniteness of *tane* is certainly not a property of the optional classifier system. Whether NCs with or without the classifier can be definite and/or indefinite is affected by various factors. In a language like WA which has

an overt definite article, both NC forms accept definite interpretations. In a language like Turkish, which is minimally different from WA in not having an overt definite article, only NCs without the classifier can receive definite interpretations. Persian, however, departs from these languages in using the form without the classifier in formal settings only, but still reserving the bare *iota* type-shifting (i.e., without overt supporters) for it, as in Turkish. It differs from Turkish in attributing definiteness to NCs with the classifier via *iota* type-shifting, though requiring overt means/markers for that.

Based on the discussion and analyses provided in this chapter, we can draw the following conclusion: Optional classifiers are optional elements in that even if NCs had not resorted to them at all they would still convey the same meaning that NCs with the classifier have. On the other hand, they are not optional in the sense that their presence has a restrictive effect on the interpretation of NCs. In other words, having the option of realizing the cardinal head overtly does not come for free. The exact reason behind this definitely awaits future considerations.

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