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ASSOCIATIVE PLURALITY IN TURKISH*

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1 Introduction

The marker of plurality in Turkish is the suffix *-lar*.¹ Its properties with respect to the NP denotations in Turkish have been extensively studied (Ketrez, 2003, Görgülü, 2011, Görgülü, 2012, Sağ, 2018, Turgay, 2019, Martí, 2020). For example, following Sağ (2018)'s proposal that unmarked Turkish NPs denote sets of atoms, the semantic contribution of *-lar* can be seen as adding all the possible sums to that set. See (1) for a sample derivation.

- (1) a. *gezegen-ler*
planet-PL
'planets'
b. $\llbracket \text{gezegen} \rrbracket = \{\text{Venus, Earth}\}$
c. $(\llbracket \text{gezegen} \rrbracket) \llbracket -lar \rrbracket = \{\text{Venus, Earth, Venus} \oplus \text{Earth}\}$

(1) shows that *-lar* is applied to a set of individuals and returns a set of individual sums along with atoms. Interestingly though, *-lar* seems to combine with referential expressions as well, which are arguments of type *e* (cf. (2)). The semantics of *-lar* outlined above does not seem to be applicable to cases like (2).

- (2) *Ahmet-ler*
Ahmet-PL
'Ahmet & his associate(s)'

The construction in (2) is called 'associative plurality' (Moravcsik, 2003, Göksel and Kerslake, 2005).² Such constructions have two major properties. One is that they involve reference to

*I WOULD LIKE TO THANK ELENA GUERZONI, YAĞMUR SAĞ, FURKAN ATMACA, EMRAH GÖRGÜLÜ AND LEYLA ZIDANI-EROĞLU AS WELL AS ALL THE PARTICIPANTS TO WAFL15 FOR THEIR VALUABLE SUGGESTIONS. ALL ERRORS ARE, OF COURSE, MINE.

¹*-lar* is subject to vowel harmony. It surfaces as either *-ler* or *-lar* depending on the vowel of the preceding syllable.

²See Den Besten (1996), Nakanishi and Tomioka (2004) and Biswas (2014) for associative plurality in other languages.

pluralities as regular plural constructions do. The other is that they involve reference to relations established based on a *focal element* in a given context.

Associative plural constructions show idiosyncratic behaviour in many respects to be discussed in the next section. Their idiosyncratic behaviour might lead to the conclusion that there is a second homophonous *-lar* semantically distinct from the regular (additive) *-lar*. However, I will argue in this paper that the semantic contribution of *-lar* both in (1) and (2) is the same: combining atomic elements in a set to create pluralities.

2 Distinctive properties of associative plurality

There are several properties that distinguish associative plurality from regular plural constructions in Turkish. Each property will be discussed under separate subsections.

2.1 Compatibility with *e* type arguments

Associative plural constructions present properties distinct from the properties of additive plurals. As mentioned above, the *-lar* in associative plural constructions appears to combine with a type *e* focal element with restrictions that will be discussed in Section 2.4. The ungrammaticality of the examples in (3) further support the observation that the semantic type of the focal element has to be *e* because the nominals in (3) are quantifiers.

- (3) a. *[Bir hala-m]-**lar** gel-di.
 one aunt-1SG.POSS-PL come-PAST
 Intended Interpretation: ‘An aunt of mine & her associate(s) came’
- b. *[Her hala-m]-**lar** gel-di.
 each aunt-1SG.POSS-PL come-PAST
 Intended Interpretation: ‘Each of my aunts & their associate(s) came’

Then, it follows from (2) and (3) that the *-lar* in associative plural constructions has to be structurally projected above a DP which semantically denotes an individual. The prediction of the claim is that the associative *-lar* has to follow everything below the DP layer. This is indeed the case. (4a) shows that the associative *-lar* follows the possessive marker which is argued to be syntactically projected below the DP level (Öztürk and Taylan, 2016). On the other hand, the *-lar* in additive plural constructions precedes the possessive marker, as expected (cf. (4b)).

- (4) a. amca-m-**lar**
 uncle-1SG.POSS-PL
 ‘My uncle & his associate(s)’
- b. amca-**lar**-ım
 uncle-PL-1SG.POSS
 ‘My uncles’

2.2 The denotation of the whole construction

Additive plurals denote sets of individuals as shown in (1c). On the other hand, associative plural constructions in Turkish denote plural individuals, which follows from the generalization made for Japanese in Nakanishi and Tomioka (2004). Nakanishi and Tomioka (2004) suggest that

associative plural constructions in Japanese are definite with definite focal elements and indefinite with indefinite focal elements. Turkish only allows *e* type arguments to be focal elements in associative plural constructions. Therefore, I will simply assume that the denotation of associative plurality in Turkish is an individual as well (cf. (5)).

(5) $\llbracket \text{Ahmet-ler} \rrbracket = \text{Ahmet} \oplus \text{b}(\oplus \dots)$ where $\text{b}(\oplus \dots)$ refers to the associated individuals.³

Of course, the discussion here does not mean that additive plural constructions cannot refer to individuals. Indeed the data presented in (4b) refer to an individual. With the semantics outlined in (1), the meaning of (4b) can be obtained as follows:

- (6) a. Assuming that $\llbracket \text{amca} \rrbracket$ denotes the set containing the individuals Ron, Ted and Harry in a given context, the denotation of its plurality $\llbracket \text{amca-lar} \rrbracket$ could be represented as in (6b).
- b. $\llbracket \text{amca-lar} \rrbracket = \{ \text{Ron}, \text{Ted}, \text{Harry}, \text{Ron} \oplus \text{Ted}, \text{Ted} \oplus \text{Harry}, \text{Ron} \oplus \text{Harry}, \text{Ron} \oplus \text{Ted} \oplus \text{Harry} \}$
- c. $\llbracket \text{amca-lar-ım} \rrbracket = \{ \text{Ron}, \text{Ted}, \text{Ron} \oplus \text{Ted} \}$ where the set of uncles are intersected with the entities that belong to me.
- d. $\llbracket \text{amca-lar-ım} \rrbracket = \text{Ron} \oplus \text{Ted}$ where the *ι*-operator is applied.⁴

2.3 The relation expressed by associative plurality

The associative plural construction in (4a) has two components: one is the focal element *amca-m* ‘my uncle’ and the other one is the relation ‘his associate(s)’. The relation component ensures that the individual produced as a result of the relevant semantic operation contains all the contextually salient individuals associated with the focal element. Since the associated individuals are selected based on the relation that they bear to the focal element, they are generally not associated with the speaker. In other words, *amca-m-lar* ‘my uncle & his associate(s)’ in (4a) can refer to an individual whose atomic parts are also contextually salient uncles of mine only if the atomic parts who are somehow associated with the focal element happen to be my uncles, as well, or if the construction is used metaphorically to refer to ‘my uncle & his other selves/personalities’. Otherwise, the associated individuals cannot bear any relation to the speaker.

On the other hand, the individual denoted by (4b) (*amca-lar-ım* ‘my uncles’) does not include a focal element or a relation expressed relative to a focal element. It is selected from a set whose elements are all contextually salient uncles of the speaker. Therefore, the atomic parts of the individual referred to in (4b) have to be uncles of the speaker, as well. The distinction made here between additive and associative plurality is important as it shows that the latter involves both plurality and a relation to a focal element which is lacking in its additive counterparts.

2.4 Other restrictions

In Section 2.1, it has been established that focal elements of associative plurality in Turkish have to be selected among referential expressions. However, not all referential expressions can be the focal element of an associative plural construction (cf. (7)).

³Parantheses and the triple dot indicate that there can be more than one related individual to the focal element in a given context, but one satisfies the concept *Ahmet-ler*

⁴The *ι*-operator that I am assuming is as described in Heim (2000): $\lambda f_{\langle e, t \rangle} : \exists ! x_e [f(x) = 1 \& \forall y_e [f(y) = 1 \rightarrow y \leq x]]$. $\iota x_e [f(x) = 1 \& \forall y_e [f(y) = 1 \rightarrow y \leq x]]$. It has a uniqueness, existence and maximality presupposition.

- (7) a. *İstanbul-**lar**-ı gör-dü-m.
 Istanbul-PL-ACC see-PAST-1SG
 Intended Interpretation: ‘I saw Istanbul & related citie(s)’⁵
- b. *Öğretmen-im-**ler** gel-di.
 teacher-1SG.POSS-PL come-PAST
 Intended Interpretation: ‘My teacher & her associate(s) came’

(7a) shows that non-human entities are not selected to be the focal elements in associative plural constructions. (7b) shows that there is also a restriction on the type of entities that could be selected as the focal element of an associative plural construction even among the referential expressions referring to a human. These aspects will be separately discussed in the next section.

3 Analysis

There is an important similarity between associative and additive plurality: both of them involve reference to pluralities (the former has to refer to an individual). The only difference in their denotation is the atomic parts they are comprised of. If one assumes that the *-lar* in associative plural constructions is different from the one in additive plurality, one has to propose that the relation and all other features of associative plurality are encoded in the semantic entry of the associative *-lar*. Given this, rather than positing a second *-lar* whose contribution encodes all the differences from as well as the similarities to the additive *-lar*, perhaps a more plausible view is to posit only one plural marker and account for the differences with a separate syntactic structure and a semantic operation, keeping the contribution of *-lar* constant. One way to achieve this is to represent the relation expressed by associative plurality separately. Then, all of its idiosyncratic properties discussed in the previous section would follow from the restrictions that the relation component of the construction imposes on the focal elements, and not from the idiosyncratic behaviour of *-lar*. See Figure 1 for the proposed structure of the associative plural construction *Ahmet-ler* ‘Ahmet & his associate(s)’ in (2).⁶

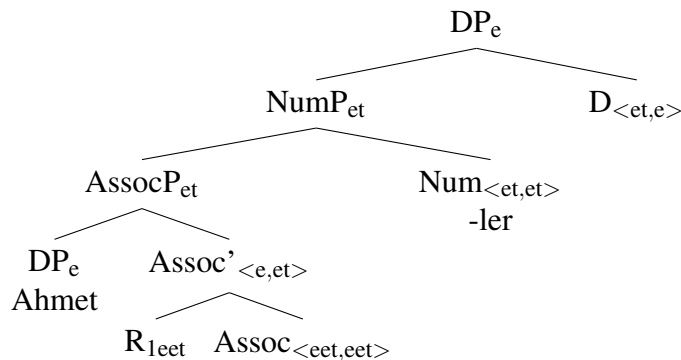


Figure 1: The proposed structure for (2).

⁵The plural marker *-lar* can occur with city names to attribute them some type of worth. (7a) is grammatical under such an interpretation.

⁶The labels I am using in Figure 1 are just for referring purposes. What is important is not the syntactic labels but the semantic operations taking place at them.

According to the structure in Figure 1, a construction like (2) (*Ahmet-ler* ‘Ahmet & his associate(s)’) is a complex individual-denoting DP which contains a lower DP, whose contribution is to provide the focal element of the construction, an associative phrase and a number phrase. The function of the entire AssocP is to combine any contextually provided relation with a focal element (*Ahmet* in (2)), to create a set of individuals consisting of the focal element and all the individuals related to him.⁷ The contribution of the Assoc head is provided in (8).

$$(8) \quad \llbracket \text{Assoc} \rrbracket = \lambda f. \lambda x: x \text{ is a human. } \lambda y. y = x \text{ or } f(x)(y) = 1$$

(9) provides a sample derivation of the associative plural construction represented in Figure 1.

- (9) a. $\llbracket \text{Assoc} \rrbracket (R_1)$ where R_1 is a contextually provided *friend of* relation.
 b. $[\lambda f. \lambda x: x \text{ is a human. } \lambda y. y = x \text{ or } f(x)(y) = 1](\lambda x. \lambda y. y \text{ is } x\text{'s friend})$
 c. $\llbracket \text{Assoc}' \rrbracket = \lambda x: x \text{ is a human. } \lambda y. y = x \text{ or } y \text{ is } x\text{'s friend}$
 d. $\llbracket \text{Assoc}' \rrbracket (\llbracket \text{Ahmet} \rrbracket) = [\lambda x: x \text{ is a human. } \lambda y. y = x \text{ or } y \text{ is } x\text{'s friend}] (\text{Ahmet})$
 e. $= [\lambda x: x \text{ is a human. } \lambda y. y = x \text{ or } y \text{ is } x\text{'s friend}] (\text{Ahmet})$ is defined iff Ahmet is a human, if defined then (9f).
 f. $= [\lambda y. y = \text{Ahmet} \text{ or } y \text{ is Ahmet's friend}]$

(9f) is the denotation of the AssocP, which is a set of individuals containing *Ahmet* and all the contextually related individuals to him. For example, if the individual *Mary* is the only salient individual that R_1 provides, (9f) could represent the set {Ahmet, Mary}. At this point, the ι -operator could apply to select an individual from this set such that the denotation of the whole construction refers to an individual as discussed in Section 2.2; however, its maximality presupposition cannot be satisfied if applied directly to the set that $\llbracket \text{AssocP} \rrbracket$ in (9f) denotes.

Thus, the application of the plurality operator above the AssocP is motivated as it creates a set that has a maximal element. Since *-lar* applies to sets of individuals, $\llbracket \text{AssocP} \rrbracket$ is an appropriate argument for it.

- (10) a. $(\llbracket \text{AssocP} \rrbracket) \llbracket \text{-lar} \rrbracket = \{ \text{Ahmet, Mary, Ahmet} \oplus \text{Mary} \}$
 b. $\llbracket \text{Ahmet-ler} \rrbracket_{\text{DP}} = \text{Ahmet} \oplus \text{Mary}$ where the ι -operator is applied to select an individual

The analysis presented here shows that although the position of *-lar* is higher in associative plural constructions than in additive plural constructions, its semantic contribution is the same in both types. Moreover, the particular semantic type that I propose for the Assoc' derives the restriction that focal elements must denote individuals.⁸

At this point, it would be worth noting that the associates of the focal elements have to be atoms at the AssocP level. Atomic associates are desirable because plural associates would predict an incorrect meaning for associative plural constructions in Turkish. Notice that non-atomic associates could generate the denotation in (11) for the $\llbracket \text{AssocP} \rrbracket$ in a relevant context.

- (11) $\llbracket \text{AssocP} \rrbracket = \{ \text{Ahmet, Mary} \oplus \text{John} \}$ where $\text{Mary} \oplus \text{John}$ is the associated individual.

We will briefly explain why 11 creates an incorrect meaning for associative plurals in Section 4. However, assuming that it creates an incorrect denotation for associative plural constructions,

⁷The ‘associate of’ relation is mostly understood to be a ‘friend of’, ‘kin of’ or ‘neighbour of’ relation. However, any incidental association salient in context could be the relevant relation in principle.

⁸It seems that focal elements have to be atomic individuals as well. But the atomicity restriction could be taken care of with a simple sortal presupposition over focal elements.

it is important to explain why R_I can only provide atoms to the set containing Ahmet and his associate(s). It is worth remembering at this point that the view adopted in this paper takes bare NPs to denote sets of atoms. Plural individuals are derived by separate operators on top. The relation introduced in Figure 1 is not such an operator. Indeed, it is not an operator at all. In other words, a plural operator would be needed to have access to pluralities. R_I by itself can only have access to the primitives of the system (i.e. atoms), not to the entities that could be accessed via other operators. Thus, the necessity of retrieving atomic associates follows from the approach taken in this paper without a further stipulation.

If (11) were the case, the application of $-lAr$ before the ι -operator applies could not be motivated, and thus the *iota*-operator could directly apply to the set that (11) denotes as its maximality presupposition could be satisfied already by the largest element of the set (Mary \oplus John). In such a scenario, $\llbracket\text{Ahmet}\rrbracket$ would denote a non-atomic individual Mary \oplus John, yet $\llbracket\text{Ahmet}\rrbracket$ can only denote the individual Ahmet.⁹

Finally, the humanness presupposition of (8) over the focal elements is necessary to account for why (7a) is not grammatical. However, the function still does not explain why the construction is only compatible with definite descriptions built on one's kin. I will appeal to a hierarchy provided in Moravcsik (2003) to account for why (7b) is unacceptable.

- (12) Proper Names < Definite Kin Nouns < Definite Title Nouns < Other Definite Human Nouns
(Moravcsik, 2003:472)

(12) states that if in a language, a nominal can be the focal element of an associative plural construction, any nominal to its left can. It can be assumed that Turkish simply starts the hierarchy from definite kin nouns, therefore proper names are acceptable in associative plural constructions, but not definite title nouns (as in (7b)) or other definite human nouns as predicted.

4 The plural marker and the denotation of NPs

This paper adopts Sağ (2018)'s analysis of plurality for Turkish, yet there are at least two more analyses of plurality. In one view, plurality is an operation that applies to sets of atomic individuals and returns a set of individual sums leaving out the atoms (cf. (13)).

- (13) a. $\llbracket-lAr\rrbracket = \text{For any } A \subseteq U, PL(A) = *A - A$ (Chierchia, 1998)
 b. $\llbracket\text{planet}\rrbracket = \{\text{Venus, Earth, Mars}\}$
 c. $(\llbracket\text{planet}\rrbracket)\llbracket-lAr\rrbracket = \{\text{Venus}\oplus\text{Earth, Earth}\oplus\text{Mars, Venus}\oplus\text{Mars, Venus}\oplus\text{Earth}\oplus\text{Mars}\}$

Adopting (13a) is not problematic for the analysis of associative plurality in Turkish presented in this paper. As long as singular NPs denote atoms and bare plurals denote sets containing their sums, the ι -operator can select the largest element containing the focal element from the relevant set. See (14) as a sample derivation of Figure 1 using this second view.

- (14) a. $\llbracket\text{AssocP}\rrbracket = \{\text{Ahmet, Mary, John}\}$
 b. $\llbracket\text{AssocP-lAr}\rrbracket_{\text{NumP}} = \{\text{Ahmet}\oplus\text{Mary, Mary}\oplus\text{John, Ahmet}\oplus\text{John, Ahmet}\oplus\text{Mary}\oplus\text{John}\}$

⁹One could also suggest that AssocP is a kind of NP with a relation component. Indeed, the whole AssocP works as a type-shifter creating a set of individuals from an individual. Singular NPs denote sets of atoms and plural individuals are created only through a plural operator in Sağ (2018)'s approach to plurality. Therefore, the relation could not have access to singularities and the higher NP (AssocP) denotation would be in line with what singular NPs denote.

- c. $\llbracket \text{Ahmet-ler} \rrbracket_{\text{DP}} = \text{Ahmet} \oplus \text{Mary} \oplus \text{John}$

The other view takes bare NPs in Turkish to be number neutral. In this view, the contribution of *-lAr* would be to eliminate atoms (or minimal members as argued in Martí (2020)).¹⁰ See (15) for a sample derivation of the word *gezegen-ler* ‘planets’ using the number neutrality approach.

- (15) a. $\llbracket \text{planet} \rrbracket = \{ \text{Venus}, \text{Earth}, \text{Venus} \oplus \text{Earth} \}$
 b. $\llbracket \text{planet-lAr} \rrbracket = \{ \text{Venus} \oplus \text{Earth} \}$

Positing a unified analysis of associative plurality is hard to achieve assuming the number neutrality approach to bare NPs. First of all, if $\llbracket \text{AssocP} \rrbracket$ provided a set containing a focal element and all the associated *atomic* individuals, *-lAr* would eliminate all the individuals in the set, creating an empty set. Second, if an approach adopting the relative atomicity as argued in Martí (2020) were pursued, the plural operator would be undefined for the set denoted by $\llbracket \text{AssocP} \rrbracket$, for the set would not contain any element that is relatively more atomic than the other.

There is a way of circumventing this problem, but it would bring back the problem mentioned in Section 3. A number neutrality approach to bare NPs implies that pluralities can occur with atoms in a set without a further operation. If NPs can have access to plural individuals without a plural operator, the relation might, as well. In other words, R_1 can actually retrieve not only the relevant atomic individuals but also the pluralities related to the focal element. If R_1 could indeed provide non-atomic associates, a set as described in (16) could indeed be created in a given context.

- (16) $\llbracket \text{AssocP} \rrbracket = \{ \text{Ahmet}, \text{Mary}, \text{Mary} \oplus \text{John}, \text{John} \oplus \text{Ted} \oplus \text{Mary} \}$ where all the individuals other than Ahmet are the associates of Ahmet.

However, in a number neutrality approach to bare NPs, the function of a plural operator would be to eliminate atoms from a set, which would create the set $\llbracket \text{NumP} \rrbracket = \{ \text{Mary} \oplus \text{John}, \text{John} \oplus \text{Ted} \oplus \text{Mary} \}$, if one assumes that the set described in (16) is the argument of the plural operator. However, this would incorrectly predict that $\llbracket \text{Ahmet-ler} \rrbracket$ could never denote the individual ‘Ahmet & his associate(s)’, but could only refer to the associates.

The discussion here shows us that if the analysis provided in this paper is on the right track, it not only unifies the associative use of *-lAr* with its additive use, but it has also implications for the status of NPs and plurality in Turkish in general. Further, it shows that the number neutrality approach to singular NPs is hard to maintain and treating *-lAr* as a semantic operation that eliminates singularities is problematic.

5 Conclusion

This paper has demonstrated that the *-lAr* used in associative plural constructions in Turkish does not have to be treated separately from the *-lAr* used in additive plural constructions. They both apply to sets of individuals (arguments of type $\langle e, t \rangle$) to create pluralities out of atoms. This analysis captures the intuition that *Ahmet-ler* ‘Ahmet & his associate(s)’ denotes a plural individual. Further discussion has shown that if the analysis provided in this paper for associative plurality is on the right track, it has implications for the theory of plurality in Turkish in general.

¹⁰What is intended by minimality here is the relative atomicity. Martí (2020) suggests that Turkish is sensitive to relative atomicity. Relative atomicity refers to the smallest member in a given set.

The discussion has shown that the number-neutrality approach and an approach in which the contribution of *-IAr* is to eliminate atoms from a number-neutral set cannot be maintained.

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