Associative Plurals as Definites

The Puzzles In this paper we discuss the semantics of associative plurals, using Mandarin as examples. Mandarin associative plurals exemplify a common expression type of associative plurals, composed of a proper name followed by a third person plural pronoun. (Moravcsik, 2003) We call the proper name as the focal referent, following Moravcsik (2003). The cluster denotes a plurality associated with the proper name. The core puzzles we will solve are as below.

(1) Context: There are three syntax professors in the department, they are Adam, Brian and Chris. The speaker has a syntax question, and she consulted people in the department.

1a. $|[\![\text{Name-}\textit{they}]\!]| \geq 2$
Wo wen le Adam tamen.
I ask ASP Adam ASSO.
I asked the other syntax professors including Adam.

1b. $|[\![\text{Name-}\textit{they}]\!]| \geq 2$
Wo wen le Adam he Brian tamen.
I ask ASP Adam and Brian ASSO.
I asked the syntax professors including Adam and Brian.

1c. $|[\![\text{Name-}\textit{they}]\!]| \geq 1$
Wo mei wen Adam tamen.
I NEG ask Adam ASSO.
I didn't ask the syntax professors like Adam.

The first puzzle is about multiplicity. When the associative plural is in assertive sentences, like (1a) and (1b), the plurals have the multiplicity inference of having a cardinality of larger or equal to 2. The inference is lost in (1c), where singletons and plurals are both negated. The second puzzle is about maximality. In assertive sentences, the associative plurals do not always require a maximal interpretation. For instance, in (1a), the speaker did not necessarily consult all the syntax professors. Another maximality puzzle is that in both (1a) and (1b), the focal referents must be consulted. The non-maximal interpretations cannot ignore the focal referents.

We propose that the puzzles can be solved if we treat associative plurals as definite plurals. The puzzles can be explained based on theories on homogeneity and non-maximality (Križ, 2015, 2016). Before we show our proposals, we explain why we think existing proposals should be rejected. The proposals we review include Smith (2020), which treats associative plurals as semantically non-atomic, and Hucklebridge (2023), which treats associative plurals as group nouns. We also give a syntactic proposal on the structure of associative plurals based on Vassilieva (2005) and Ahn (2022). The proposal crucially rejects the view that the focal referent and the associative plural marker are in a conjunction relation, which influences the semantics of the plurals.

Against Smith (2020) Smith (2020) gives an implicature account of similative plurals and proposes a different analysis to associative plurals. We will show that neither account can fully capture the puzzles listed above. Smith's implicature account of similative plurals is based on the implicature account of bare plurals (Spector, 2007; Zweig, 2009). Under the implicature analysis, an associative plural like *Adam and Brian-asso* has the bare form *Adam and Brian* as its alternative. The alternative is negated during exhaustification. It is predicted that when the focal referent is atomic, the associative form interprets as plural after exhaustification; when the focal referent is plural, as in (1b), the associative form is a plural with a cardinality larger than that of the focal

referent, contradictory to the judgement. Mandarin is not special, associative plurals in Japanese, Afrikaans etc. share the interpretations of (1b).

Smith thus gives the following semantics to associative plurals.

(2) $[\![Asso]\!] = \lambda x.\, f(\lambda y.\, \text{ASET}(x)(y) \wedge \neg \text{ATOM}(y))$

The associative plural marker takes an individual argument x and returns some non-atomic individual selected by the contextually determined choice function f in the ASET of x. ASET stands for the notion of associate set defined in Smith (2020). It contains the singleton x, and the set of sums derived from x and some contextually selected socially related individuals. For instance, under the context provided in (1), the ASET of *Adam-asso* is as below.

(3) $\text{ASET}(a) = \{a, a \oplus b, a \oplus c, a \oplus b \oplus c\}$

This analysis cannot derive the interpretation of associative plurals under negation, as exemplified in (1c). Together with the non-atomic semantics, the proposal makes the prediction that in a context where the speaker consulted Adam, but not Brian and Chris, (1c) should be true, oppositive to the fact.

Against Hucklebridge (2023) Hucklebridge proposes that associative plurals resemble group nouns like *committee* and *family.* We provide preliminary evidence supporting the contrary view that compared to group nouns, associative plurals are semantically closer to definite plurals. Schwarzschild (1996) provides several tests differentiating group nouns and definite plurals. These tests show that associative plurals behave like definite plurals, not group nouns. We use Mandarin as examples here, but the generalization applies to other languages.

Predicates like *have three members* and modifiers like *whole* can only co-occur with group nouns, not definite plurals. The generalization applies to Mandarin.

(4)	zhengge	zuweihui/*nvhaimen/*Adam-tamen	dou	lai	le.	
	Whole	committee/*the girls/*Adam-ASSO	DOU	come	ASP	
	*The whole committee/*the whole girls/*Adam and his associates came.*					
(5)	zuweihui/*nvhaimen/*Adam-tamen	you	san	wei	chengyuan.	
	Committee/*the girls/*Adam-ASSO	have	three	CL	member	
	*The committee/*the girls/*Adam and his associates has three members.*					

These predicates which select group nouns cannot co-occur with associative plurals. The contrasts in (4) and (5) show that associative plurals are semantically parallel to definite plurals, instead of group nouns.

Proposal Smith (2020) and Hucklebridge (2023) analyze associative plurals as bare plurals or indefinites. Nakanishi and Tomioka (2002) show that Mandarin associative plurals are definites based on several diagnostics tests which we will not iterate here due to space. We show that based on the assumption that Mandarin associative plurals are definites, the puzzles listed above can be explained.

A first innovation we make is that instead of assuming the focal referent and the associative plural markers are in a conjunction relation (Smith, 2020), we propose that associative plurals are inherently deictic and the focal referents are deixis. The proposal is motivated by studies on demonstratives and gestures by Nowak (2019) and Ahn (2022). In Mandarin, only proper names can serve as deixis. In other languages, other forms of deixis are allowed, leading to varied

interpretations of associative plurals. The semantics of Mandarin associative plural markers are as below.

(6) $[\![Asso]\!]^{cov_i} = \lambda x.\ \iota y\ [\forall z(z \text{ is in the same cell in } cov_i \text{ as } x \rightarrow z \in y)]$

We take the view that the universe of discourse is relativized to a certain cover (Schwarzschild, 1996). All individuals in the universe are a member of a cell in the cover. The exact restrictions of covers require further studies, here it is enough to assume that covers are decided by the QUD. Under the consultation of syntax question context described in (1), the syntactic professors Adam, Brian and Chris are in the same cell. The associative plural marker takes an individual, and outputs the plural individual which is the plural definite containing all the members of the cell. *Adam-asso* and *Adam and Brian-asso* thus has the same semantics as *the syntax professors*.

We now explain how the puzzles at the beginning can be solved. The multiplicity inference which is present in the positives and absent in the negatives are due to the homogeneity of definite plurals (Križ, 2015). As there are many elaborations on this in the previous literature, we will not further explain due to space. We are neutral about whether the implicature account of homogeneity (Magri, 2014; Bar-Lev, 2021) or the trivalent account of homogeneity (Križ, 2016; Križ and Spector, 2021; Guerrini and Wehbe, 2024) should be extended to associative plurals.

Here we focus on two points to do with maximality. The first is the observation that associative plurals are not always maximal. We propose that this is due to the non-maximality of definite plurals, instead of the associative plurals being indefinites (Hucklebridge, 2023). A first piece of evidence is that maximal interpretations are required under certain contexts, as already observed in Hucklebridge (2023). It has long been noticed that the availability of non-maximal interpretations of definite plurals is subject to contexts. (Brisson, 2003) Another piece of evidence is that when co-occur with adverbials like *all*, maximal interpretations are required for associative plurals.

(7) Context: There are three syntax professors in the department, they are Adam, Brian and Chris. The speaker has a syntax proposal, and she consulted people in the department.

Adam tamen quan dou tongyi.
Adam ASSO all DOU agree
The syntax professors including Adam all agreed.

(7) can be felicitously used only if the speaker asked all syntax professors. The sentence is false if he asked only two out of the three professors. Without *all*, the sentence can be felicitously used when the speaker asked two out of the three syntax professors.

The other point which can be explained under our analysis is the fact that focal referents are hard to be ignored in the interpretation of associative plurals. We believe associative plurals are similar to nominal conjunctions and borrow Križ's (2015) explanation on the non-maximality of nominal conjunctions here. According to Križ's (2015), the components of nominal conjunctions are mentioned explicitly as the conjuncts. If an individual weren't relevant to the current issue, it wouldn't be listed explicitly in a conjunction, thus no non-maximal reading of the conjunction is possible. We believe the focal referents of associative plurals serve as another example of the constraint sketched by Križ. The focal referents are mentioned explicitly in associative plurals, making them relevant to the current issue. Non-maximality is only permitted if additional contexts make the participation of the focal referents unimportant.

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