

Counting nouns in ASL

Elena ‘Helen’ Koulidobrova, Central Connecticut State University
elena.koulidobrova@ccsu.edu

Abstract: This paper is the first step towards examination of the mass-count distinction in ASL. We find that as predicted by the previous literature (Chierchia 2010, Deal 2017), the countability distinction in ASL, albeit not being immediately visible, is connected to the number marking.

1. Introduction

Much work in semantics has been dedicated to the issue of bare nouns, with respect to their (in)definite readings, mass/count distinction, kind/individual readings. The literature is robust, and I will not do it justice by engaging in an overview. Luckily, others, whose theoretical goal is to reconcile various aspects of this literature, have done the work for me. Thus, skipping the history of the debate, I will refer the reader to the overview in Deal (2017). There, one also finds a convenient table of empirical and theoretical issues that have driven the discussion irrespective of accounts or implementation: admittedly oversimplifying greatly, one can say that nouns fall into three classes, and these classes behave differently with respect to particular environments.

Table 1. Countability distinctions (Deal 2017 (16)).

	<i>cat</i>	<i>footwear</i>	<i>water</i>
(a) pluralization	✓	*	*
(b) direct combination with numerals	✓	*	*
(c) combination with <i>each, many, fewer</i>	✓	*	*
(d) combination with <i>much, less</i>	*	✓	✓
(e) combination with ‘count adjectives’	✓	✓	*
(f) comparison based on number	✓	✓	*
(g) comparison based on mass/volume	*	*	✓

In the table above, the leftmost column outlines various properties observed to be true of three different classes of nouns (in italics) – objects on the left, substances on the right and aggregates in the middle columns (also known as count, mass, and fake-mass). These observable properties of nouns can also be further divided into those related to cumulativeness/SUMS ((a)-(d)) vs. divisiveness/PARTS ((e)-(f)).

In this paper, I explore the divisions provided directly by Table 1 in American Sign Language (ASL) – the language in which countability has previously not been examined directly – and show that the diagnostics above (alone) will not suffice. To preview, the results of the diagnostics yield a language without a countability distinction; yet, as paper demonstrates further, ASL encodes countability after all. The paper is structured as follows. In section 2, I

will briefly introduce the language under examination and the basic data; in sections 3 and 4, I examine ASL number marking strategies and their influence on countability. Section 5 concludes and outlines directions for future research.

1.1 Notation and Methodology

Following conventions in sign language linguistics, all ASL glosses are in SMALL CAPS. The line above the utterance indicates the spread/duration of the nonmanual marking associated with either role-shifted material (RS), topicalization (t), or a question (wh- or y/n-). The letter/number separated with a dash (e.g. a-) indicates the area of signing space dedicated to a particular referent and, thus, the locus of the shift (e.g. '1' indicates the first person, the signer). Subindices i, j, k, ... indicate coreference. Addition of '+++' indicates the addition of a third person.

Two types of data were used in this paper from two different language consultants. Both consultants are Deaf: one deaf-of-deaf (20 years of language consulting), the other deaf-of-hearing (ASL acquisition prior to 12ms.). Data collection occurred in three stages: elicitation with grammaticality judgment (sentences and individual signs), play-back of videos (with context matching with over a month between separate sessions. At neither of the sessions was written English employed (i.e. no written sentences were presented to the consultants).

The elicitation stage consisted of three independent steps:

1. The PI recounted the context (in ASL). The consultant was then asked to describe the situation.
2. Elicited sentences were checked for a variety of strategies (grammaticality judgment); the consultant's decision was followed by a lengthy discussion of potential alternatives.
3. The play-back part of data collection consisted of two steps as well: (i) discard [wrong, I made a mistake here] / keep [correct]), and (ii) context matching, done in the form of multiple choice from: the consultant chose from the contexts she had offered in #3 above (Other was always an option but during the follow-up discussion with the PI, all items in this category were eventually reclassified as belonging to one of the original contexts.

In line with the general standard in linguistic research, all grammaticality judgements reported here are as follows: ACCEPT/FINE/NATIVE ASL (✓), AWKWARD/L2 ASL (?/?), and BAD/NOT ASL(*). Recognizing the coarseness of the scale, but also for the sake of simplicity at this stage of the project, we have collapsed '?/?' and '*' cases.

2. Rationale

ASL is a visuo-gestural language, historically related to French Sign Language. For the purposes of this paper, two things must be said about the language: a) all verbal arguments can always be bare, and b) nouns can always be bare singular in form. Since both of these observations are relevant to the issues at hand, they each deserve further elaboration.

The first observation is best exemplified by the utterances in (1)-(2).

(1) WOMAN BORROW VIDEOTAPE

‘A/the woman borrowed a/the videotape’ (adapted MacLaughlin 1997: 124)

(2) BOY WORRY, BECAUSE NOT BUY DICTIONARY

‘That boy is worried because he did not buy {a dictionary/dictionaries}’

i. ‘there is a particular dictionary, s.t. the boy did not buy it’

ii. ‘the boy did not buy any dictionaries’ (Author 2017)

As the English translations show, the bare noun can have either definite, indefinite, or generic readings.

Some researchers have argued for an existence of an optional definite article IX (MacLaughlin 1997). Elsewhere, however, I have demonstrated that IX does not function as a such an element. Consider (3), discussed at length elsewhere (see Author 2012, 2017 and Author & Lillo-Martin 2016).

- (3) ^{wh} TODAY SUNDAY. DO-DO. GO CHURCH, SEE (*IX) PRIEST. (*IX) ^t PRIEST NICE
‘Today is Sunday. What to do? I’ll go to church, see the priest. The priest is nice.’
(Author & Lillo-Martin 2016: (22b))

The first mention of priest in (3) is the case of what is known as ‘global uniqueness’; the second is anaphoricity. The former context is cross-linguistically encoded by the weak definite article, if such exists in the language, and the latter by the strong one (Schwarz 2009 and references therein; Arkoh & Mathewson 2013). Author (2017) takes (3), as well as the literature that it relies on, as evidence that ASL lacks the definite article – i.e. it lacks a morphological exponent for the iota- operator – while [IX PRIEST] is in principle a licit combination, it means something else entirely (see Author & Lillo-Martin 2016); the noun in (3) must occur in its bare form. This observation is important for the goals of this inquiry for the following reasons: it is well known that languages with number marking reveal sensitivity in determiner use to the mass-count distinction. However, as (3) shows, ASL determiners may not be helpful here – we will need to look elsewhere.

The other relevant observation about ASL is that its nouns can appear in either their bare (a.k.a. singular) or ‘repeated’ (‘pluralized’) form. Both descriptive/didactic (Cokely & Baker-Shenk 1980) and theoretical (Fischer 1973, Wilbur 2005, Sandler & Lillo-Martin 2006, Pfau & Steinbach 2006, Berent et al. 2014) researchers agree that plurality may be expressed via ‘sign repetition’ (Cokely & Baker-Shenk 1980) – a process akin to reduplication found in many spoken languages.

- (4) ^t 1-POSS FATHER TREE+>+>+ ^t CUT
‘My father has cut trees’

This process itself, however, is optional: as (5) shows, the same reading can be obtained without reduplication (this is also evident in (2)).

- (5) $\frac{\text{t}}{\text{t}}$ 1-POSS FATHER TREE CUT
'My father has cut a tree/trees'

The language behaves similarly in cases of argument ellipsis (as in (6)), and, as (7) demonstrates, in such a configuration, number (at least the quantificational value of the NP) can be simply 'ignored' (as in (7iii)).

- (6) BOY WORRY, BECAUSE NOT BRING Ø, FORGET
'That boy is worried because he did not bring (a book/books), he forgot'
i. 'there is a particular book, s.t. the boy did not bring it'
ii. 'the boy did not bring any books'
- (7) A: THREE STUDENT JOIN 1-POSS CLASS
'Three students joined my class'
B: Ø DROP 1-POSS CLASS
'_____ dropped my class'
i. the same three students dropped B's class
ii. different three students dropped B's class
iii. some other number students dropped B's class, including 1 (Author 2017)

Considering the data in (2)-(6), one question we might ask is whether '+++' on the nouns like TREE in (4) – what has been assumed to encode number marking in ASL – in fact encodes number, or whether ASL marks number on nouns at all. The answer to this question is relevant to the overall goal of this paper: previous research has connected countability distinction to number marking (Chierchia 1998 a-b, Chierchia 2010, i.a.).

Incidentally, Petronio (1995) argues that the element that determines the quantificational value of the NP is typically not encoded in the noun at all but, rather, somewhere outside of it: an agreement morpheme on the verb if the verb is agreeing (as in (8a)), by what is in the previous context (as in (8b)) and/or by what is more plausible given the knowledge of the world (as in (8c-d)). In addition, the event-type matters: unlike the accomplishment GIVE in (8e), each subsequent act of which introduces a new event, the activity SHOW in (8f) can merge with another act of the same type without introducing a new event (Vendler 1967).

- (8) $\frac{\text{t}}{\text{t}}$ a. a-NURSE, 1-IX FINISH INFORM agreeing-a {[singular]/[dual]/[multiple]/[exhaustive]}
'I informed {the nurse/two nurses/the nurses/all nurses}'
b. STUDENT FRUSTRATE, TEACHER UPSET
i. *Context: The Mastery Test is generally not well liked in the K-12 environment*

- ‘Students are frustrated, teachers are upset’
- ii. *Context: The argument between a teacher and a student needs to be resolved*
‘The student is frustrated, the teacher is upset’
- _____t
- c. CAR, TWO STUDENT BUY
- i. ‘Two students together bought a car’ → more salient
- ii. ‘Two students bought a car each’
- _____t
- d. BOOK, TWO STUDENT BUY
- i. ‘Two students each bought a book’ → more salient
- ii. ‘Two students together bought a book’
- t
- e. a-STUDENT, BOOK ANN GIVE-a[exhaustive]
‘Ann gave a (different) book to each student’
- _____t
- f. a-STUDENT, PICTURE ANN SHOW-a[exhaustive]
‘Ann showed the (same) picture to each student’ (adpd. Petronio 1995)

However, there is one part of the utterance that is typically considered to be NP-related in the literature that also encodes number in ASL, according to Petronio, – a classifier (as in (9)).

- _____t
- (9) a. a-STORE, MAN CL:/1/ GO-a
‘The man went to a store’
- _____t
- b. a-STORE, MAN CL:/44/ GO-a
‘The men went to a store’ (Petronio 1995)

This is one of the properties, she claims, in which ASL parallels Mandarin and Korean – languages that also do not mark number morphology on the NP. This parallel is clearly seen in (10) vs. (5).

- (10) a. Ma wo kanjian le [Mandarin]
Horse I see PAST
‘I saw horse(es)’
- b. Mal- ninna- kapo- at- ta [Korean]
Horse-TOP I-NOM see-PAST-DECL.
‘I saw horse(s)’ (Petronio 1995)

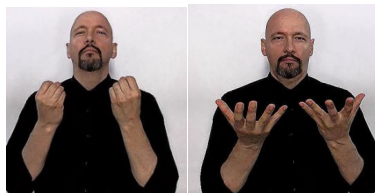
Finally, our small data-set collected for a different study contains items like (11).

- (11) IX1 WALK-INSIDE ROOM WOW MANY[+mouth] SHIT
'I walk into the room... Wow, there is many shit (here)'



The English translation is ungrammatical: many is a D-quantifier traditionally associated with count (object), not mass (substance) nouns; crap, at least in English, is a mass (or perhaps fake mass/aggregate) noun (see Table 1). Therefore, a set of options here is fairly limited: (a) either MANY does not necessarily pick out a count noun, despite suggestions to the contrary in Abner & Wilbur 2017, e.g., or (b) SHIT denotes something other than (fake)mass, or (c) there is no countability distinction in ASL at all (as has been argued for Yudja in Lima 2014, 2016, e.g.).

Figure 1. MANY (Lifeprint.com)



The various observations in this section carry consequences for the original goals of this paper. For instance, literature has long argued for a connection between obligatory marking of number (even if its exponent is zero) and how the language encodes mass-count distinction. Given other suggestions in the literature that ASL parallels East Asian languages (Sandler & Lillo-Martin 2006, Author 2012, 2016) – famously languages with rich classifier systems – and the fact that the countability distinction in ASL has never been examined (though alluded to in Abner & Wilbur 2016, Abner 2012, Author 2012), two questions arise: how would ASL perform on the diagnostics in Table 1, and can its behavior be attributed to its number marking strategies in (8)-(9)?

3. Basic data: ASL appears not to respect the countability distinction

As briefly alluded to in the introduction, much research has focused on the reasons for the different behavior of nouns with respect to the diagnostics in Table 1. Here I will not reproduce this debate; instead I will simply paraphrase (from Table 1 and the extensive literature it

represents) the expectations for mass nouns (like CRAP in (11)), where (12a-c) reveals the SUMS properties of nouns and (12d-e) reveals their PARTS properties (see Deal 2017 for the discussion):

(12) Mass nouns:

- a. Should not pluralize
- b. Should not directly combine with numerals
- c. Should not combine with each, many, fewer
- d. Should not combine with ‘count adjectives’/stubbornly distributive predicates (as in Schwarzhild 2007, 2011, i.a.)
- e. Should not compare based on number (as in Barner & Snedeker 2005, Bale & Barner 2009) but, rather, based on volume.

As (13) demonstrates, however, various nouns encoding substances in ASL fail the predictions outlined in (13) rather spectacularly.

- (13) a. WOW SHITarc+>+>+ HERE ~ (12a)
lit. ‘Wow, shit.PL are all over here’
- b. PLEASE GIVE-1 **THREE** GOLD/BLOOD ~ (12b)
lit. ‘Please give me three gold/blood’
- c. WOW NEED **MANY** OIL FOR FOOD ~ (12c)
lit. ‘Wow, I need {many/much} oil for food’
- d. IXa GOLD **SMALL** ~ (12d)
lit. ‘That gold a small.’
- e. *Context: Mary’s wine barrel contains more wine (volume) than Peter’s 15 bottles*
PETER HAVE **MORE** WINE
‘Peter has more wine’ (true on number reading, false on volume reading)¹ ~ (12e)

The data in (13) show that the original observation (in (11)) is not limited to one lexical item or to cases of coercion – the phenomenon is productive and affects BLOOD and GOLD as easily as it does WOOD and OIL.²

One way of interpreting (13) is to say that ASL does not differentiate between mass and count nouns at all – i.e. either all nouns are mass (and ASL is like Mandarin, e.g.) or all nouns are count (and ASL is like Yudja, Lima 2014). Whichever the more plausible account of these two, it makes a particular prediction: conjunction of traditionally mass and count nouns should be just as licit as conjunction of mass and conjunction of count nouns. Yet, consider (14), where the prediction above is not borne out:

¹ Importantly, (14e) is ambiguous: the volume reading remains possible but during different sessions, the consultant showed no consistency in selecting the volume/number answer. The crucial point here is that the number reading is available at all.

² Note that Chierchia (2010: (25)) argues that *blood* is mass cross-linguistically and ought not allow this behavior.

- (14) a. GIVE-1 BOOK disj-shift PEN
‘Give me a book and a pen’
b. GIVE-1 OIL disj-shift BLOOD
‘Give me oil and blood’
c. *GIVE-1 BOOK disj-shift BLOOD
‘Give me a book and blood’

In other words, despite the fact that the properties outlined in Table 1 did now show the difference between mass and count nouns, this difference might yet exist, as evident by the impossibility of the conjunction. Because clearly, the diagnostics in Table 1 are not enough here, we need another place to look. Assuming, with Deal (2017), that the countability distinction is universal (and otherwise would be unlearnable) I adopt here the suggestion from Chierchia (2010) as the roadmap:

- (15) ‘...(T)hree quite different ways in which the mass count distinction is coded. [...] (I)n classifier languages we detect a different behavior of mass versus count in the classifier system; in number marking languages, the distinction affects the distributions of plural versus singular morphemes, while in nominal number neutral languages it shows up in the distribution of numerals.’
(Chierchia 2010)

In exploring the relevant properties of ASL, we might ask: is it a (generalized) ‘classifier’ language? If not, is it a number marking language? If not, we will check the numerals (and related items) for the presence of the countability distinction. The answers to the questions above promise to shed light on a number of phenomena that are of independent interest.

4. ASL is not a numeral classifier language

It is generally accepted in the literature that ASL classifiers are predicates (see an overview in Schembri 2003 and references therein; more recently in Abner 2017 and Davidson 2015) but those that denote nouns are better described as noun class markers (Hong 2008, Pfau & Steinbach 2006, Benedicto & Brentari 2004, Padden et al. 2013, i.a), a.k.a. sortal classifiers. These are precisely the elements that have been argued in spoken languages to indicate the unit of counting while appearing to be semantically redundant (Grinevald 2005), and which could be left out of a sentence without much change in meaning (Jacob 1965 and Adams 1991 on Khmer, an Austro-Asiatic, Cambodia). Different types of such classifiers are represented – albeit far from it being a comprehensive list – in (16).

(16) Classifiers in East-Asian

- a. sān bēn shū [Mandarin]
three CL^{volume} book
- b. liǎng jìn mǐ
two CL^{kilo} rice
- c. mwumw jilu-w/ jil-men [Mokilese]Mokilese
fish three-CL^{general} three-CL^{animate}
'three fish'
- d. suhkoa rah-pas
tree two-CL^{long object}
'two trees' (Dotjes 2012)

These properties of numeral classifiers are also true of (8), repeated here as (17), minimally amended, and (18), which shows that different 'classes' of nouns in ASL are associated with different classifiers. These classes are based on a variety of characteristics, including size and shape (SASSE, Suppala 1986, Schick 1987; see Schembri 2003 for an overview).

- (17) a. _____^t
a-STORE, MAN (CL^{person1}) GO-a 'The man went to a store'
- b. * a-STORE, MAN (CL^{cylindrical}/ CL^{vehicle}) GO-a
- (18) a. MANY BOTTLE CL^{cylindrical} >+>+>+
'Many bottles are standing next to each other'
- b. THREE CAR CL^{vehicle} >+>+>+
'Three cars are standing next to each other' (Pfau & Steinbach 2006)

The fact that ASL classifiers are sortal, even in predicate cases, makes them at least in principle eligible for a comparison with their East Asian counterparts in Cheng & Sybesma (1999), Borer (2005), Dotjes (2012), i.a. It turns out, however, further examination reveals that these sortal classifiers are clearly of a different variety than their 'count classifier' relatives in Mandarin, Khmer and other related languages.

First, ASL classifiers encode multiple types of information. Consider CL1 in (19). Otherwise identical to (17a), it is different in one respect – the noun is DOG vs. MAN, and the use of CL1 is now ungrammatical (19i). This is expected: dogs do not move upright in the way expected of humans. However, suppose we actually order a dog to move on its back legs – to approximate the SASSE associated with a person? It turns out that in such a case as well, CL1 remains illicit (19ii).

- (19) _____^t
*HOUSE, DOG CL1 GO-a
'The dog went to the house'
- i. the dog moves typically
- ii. the dog moves approximating a human (on back legs)

Together with (18) then, (19) serves as evidence that CLs in ASL actually mark something other than number overtly. Yet, simultaneously, the same classifier also appears to mark number: addition of a numeral enforcing a plural reading to the original (17a) makes the sentence ungrammatical. This is shown in (20).

- (20) ^{_____t}
* a-STORE, MAN FIVE (CL^{person1}) GO-a
'Five men went to a store'

According to our consultants, (20) results in a contradiction since CL1 induces a reading in which the human is singular.

The next question is how to analyze Petronio's CL/44 in (9b)? According to her analysis, this is the pluralized version of CL/1; however, she offers no independent evidence for this view except for the English translation. Our task here is to extend the analysis of CL person1 to CL/44.

As (21) below demonstrate, CL/44 behaves on par with CL^{person1}.

- (21) ^{_____t}
a. *HOUSE, DOG CL/44 GO-a
'The dogs went to the house'
i. the dogs move typically
ii. the dogs move approximating humans (on the back legs)

^{_____t} ^{_____t}
b. * a-STORE, MAN ONE (CL/44) GO-a
'One man went to a store'

The same type of contradiction as in (20) was reported by our consultants with respect to (21b): CL/44 induces a reading of plurality but ONE suggests a singular individual.

Finally, to exclude the possibility that CL/44 makes reference to '44' (which would account for the ungrammaticality of (21b), I offer (22a) – (9b) amended with a continuation – where the number of individuals who entered the store is limited to six and yet CL/44 is used. Additionally, the sentence attempts, and fails, to establish coreference between CL/44 and a singular pronominal expression (IX-a) while the plural version thereof (IX_{arc}-a) works fine.

- (22) ^{_____t}
a-STORE, MAN CL/44 GO-a FIVE YES BUY ONE NOTHING FINISH. { *IX-a/IX_{arc}-a }
RICH
'The men went to a store. Five bought something, one did not. That's it. {That person is/those people are} rich'

I take the data above as corroborating the original intuition in Petronio (1995): classifiers encode plurality (in some pre-theoretic at this point sense); however, (17)-(19) also appear to

disambiguate between noun classes (human vs. not, e.g.). I thus conclude that CL/44 encodes something like [+human, +PL or -SG] and CL/1 [+human, -PL or +SG]. This, turns out, is not an isolated incident of a classifier with number marking; the phenomenon is also recorded in other works on the topic as a productive strategy in the language. While the ability to combine number marking and the classifier on the NP is not unique to ASL (cf. Wiltchko 2008 for Halkomelem Salish), number marking on the classifier itself makes ASL classifier system special.

Further, cross-linguistically, in the ‘count classifier’ languages, the classifier and the numeral are always adjacent (Greenberg(-Sanchez generalization) 1972/1978), as in (23); nothing can intervene within this complex and disrupt the adjacency.

- (23) a. [N – Num – CL] b. [N – CL – Num]
c. [Num – CL – N] d. [CL – Num – N]
e. *[Num – N – CL] f. *[CL – N – Num]

The hierarchy of the relationship between the classifier, the noun, and the numeral in the language appears to depend on the language. In some languages, classifiers are fused with the numeral but then forms a constituent with the noun (e.g. Nivkh, Gruzdeva 1998; Japanese, Downing 1996; Mokilese, Harrison 1976); in others, a constituent with the NP is formed first (Mandarin, Cheng & Sybesma 1999; Thai, Tashkent Uzbek and Assamese, Ailenvald 2000). The aforementioned has been observed for Indo-European, Altaic, and Niger-Congo languages and is quite robust (Doetjes 2012, Aikevald 2000, Cheng & Sybesma 1999, Ikoro 1996, among others). ASL, however, does not mandate that this adjacency be satisfied at all: (23) shows that, in violation of (23e) as CAR occurs between THREE and CL^{vehicle}, and adjectives CHA ‘huge’ and DRUNK show up between the noun and the classifier.

- (24) a. THREE CAR (CHA) CL^{vehicle} >+>+>+
‘Three (huge) cars (are standing there)’
b. WOMAN DRUNK CL^{person1} FALL
‘A drunk woman (standing) fell’

One final datum that leads us to suspect the otherwise apparent parallelism between ASL and languages like Mandarin (see (10)) has to do with the ‘universal grinder’ (Pelletier 1975, *inter alia*). Cheng, Doetjes, & Sybesma (2008) demonstrate that in Mandarin – a generalized classifier language – does not grind its nouns sufficiently. Yet, the opposite is true in ASL:

- (25) a. qiáng-shang dōu shì gǒu [Mandarin]
wall -top all be dog
‘There are dogs all over the wall’ ≠ ‘There is dog (dog-parts) all over the wall’

- _____t
b. DOG, SPREAD-ON-FLOOR (CL^{rounded-pile})
‘There are dogs all over the wall’ / ‘There is dog (dog-parts) all over the wall’

Additionally, while Mandarin, e.g., disallows the use of classifiers in the grinding context (Cheng et al. 2008), ASL allows it (25b).

How do we interpret the data above? One reasonable option here is to say that CLs in (9)-(25) require an analysis other than what has been proposed for generalized quantifier languages – i.e. these are not numeral classifiers after all. Instead, they are first and foremost predicates that accidentally manage to mark noun classes (see Benedicto & Brentari 2004 but also Davidson 2015 and Abner 2017, for example). Whatever their account in the end, I take the data the preceding sections as direct evidence that ASL classifiers do not parallel numeral classifiers in the generalized classifier languages. This conclusion echoes previous literature where the issue has been briefly discussed (Abner 2012, i.a.).

5. Number marking on nouns: When plural is really plural

Having set aside a possibility that ASL is a generalized classifier language (and that we ought to be looking for the mass-count distinction in the classifier itself), let us move on to the second option – number marking. As mentioned in previous sections, ASL has at least two ‘pluralization’ strategies: one outside of the NP (see (8)-(9)) and one within it (see (4)). The latter is the one of interest in this section, since it directly affects countability of the noun and, by implication, the issue of the mass-count distinction.

In their work on the German Sign Language (DGS), and cross-linguistically, Pfau & Steinbach (2006), (2016) argue that reduplication is morphological realization of PL, an allomorph of which, under certain conditions, is zero-marking. Crucially, with a numeral or a reduplicated adjective, the noun must retain its non-plural form; in this, DGS parallels Hungarian, Turkish, and a variety of other languages. The same can be said for ASL. And when the reduplication occurs/is allowed, its presence is always optional. These properties are shown in (26)-(27).

- (26) ‘Five / many kids’
a. * {FIVE / MANY} CHILD +>+>+
b. {FIVE / MANY} CHILD
(27) ‘Blue/small books’
a. * BOOK+++ {BLUE +++/SMALL +++}
b. BOOK (+++) {BLUE / SMALL}

Two questions arise here: does ASL actually obligatorily mark number on nouns? At first glance,

(25) answers this immediately with a ‘no’; this is also consistent with the observations in Petronio (1995) (section 2). But in light of the claims in Pfau & Steinbach, we can now ask this question differently: when plural is not overtly marked, is the stem singular or simply bare? If the former, we expect ASL to behave just like other languages that obligatorily mark number (e.g. English) in this respect; if the latter, it should behave very differently.

The first diagnostic we apply here is entailment. Consider the English example in (28) containing child.PL – i.e. children. Even if B only has one child, the sentence remains felicitous (Sauerland 2008; Rullmann and You 2006; Zweig 2009; Farkas and de Swart 2010, Nomoto 2013; i.a.).

- (28) A: Do you know if she has any children?
B: Yes, she has one daughter
B': #No, she has one daughter

ASL CHILDREN, like its English counterpart, is a lexical item typically intolerant of a singular referent. This is shown in (29)³.

- (29) IX-1 HAVE ONE {*CHILDREN/KID} NAME MARY
‘I have one child, her name is Mary’

The expectation then is that since ASL behaves as a language with a pluralization strategy (like English) and lexical plurals (like English), it should also exhibit similar entailment patterns in terms of number.

Compare now (28) with (30). The basic observation here that ASL behaves in the manner that is directly opposite from English.

- _____ y/n
(30) A: IX-2 KNOW IX-a HAVE CHILDREN
‘Do you know if he has children?’
B: #YES HAVE ONE DAUGHTER
‘Yes, he has one daughter’
B': NO, ONLY ONE
‘No, only one’
B'': YES HAVE TWO OR THREE DAUGHTER...FORGET
‘Yes, he has two or three daughters, ... I forget’

The required plural reading observed in (30) is not restricted to lexical plurals (Acquaviva 2008) and is a part of a robust pattern in the language. Note (31) (one-handed noun TREE) and (30)

³ Existence of *pluralia tantum* nouns independently suggests that number marking is at least in principle possible in the language.

(two-handed noun BALL), the difference between which is phonological in nature – something that has been argued to be crucial in distinguishing among the various types of pluralization strategies (Pfau & Steinbach 2006, 2016; and Wilbur 2009; i.a.): the former involves sideward movement in conjunction with reduplication (indicated by ‘>’ and ‘+’), the latter reduplication only (indicated by ‘+’).⁴

- _____y/n
(31) A: HAVE TREE+>+>+> HERE
‘Do you have trees?’/ ‘Are there trees here?’
B: #YES, HAVE ONE PINE
‘Yes, we have one pine’
B’: NO, ONLY ONE
‘No, only one’
- _____y/n
(32) A: HERE HAVE BALL +++
‘Do you have balls here?’/ ‘Are there balls here?’
B: #YES, HAVE ONE BALL
‘Yes, we have one ball’
B’: NO, ONLY ONE
‘No, only one’

In this, ASL behaves very differently from English (28) and Turkish (33) – both languages with strict requirements on number marking, though the path each of the languages follows here is different.

- (33) A: Ormanda ayı-lar-a rastladınız mı? [Turkish]
‘Did you come across bears in the forest?’
B: Evet, bir tane gördük. ‘Yes, we saw one.’
B’: #Hayır, bir tane gördük. ‘No, we saw one.’ (Sag 2016)

Compare, however, ASL to Korean – a language that has been argued to lack the obligatory number marking requirement.⁵

- (34) A: namu-tul-ul kajigo iss-eoyo? [Korean]

⁴ Neither sentence means that there are three books (or trees) here, despite the fact that the relevant noun is repeated three consecutive times. With the literature, we conclude that this sign repetition (Cokely & Shenk 1987) does not encode correspond to the number of repeated events.

⁵ I purposefully abstain from an in-depth discussion of Korean here – as Kim (2005) shows, Korean *-tul* does much more than simply serve as PL.

- tree-tul-acc take exist
'Do you have trees'
B: #ne, sonamu hana nam-ass-eoyo.
yes, pine one leave-past
'Yes, we have one pine' (Ahn & Snedeker, in prep.)

Assuming that reduplication marks number on nouns, then when an ASL noun is overtly marked, it is interpreted as necessarily plural. In comparison, consider (35), in a sense a mirror image of the English (28) – the non-plural KID can now be interpreted either as singular or plural.

- _____y/n
(35) A: IX2 HAVE KID
'Do you have any kids?'
B: YES HAVE {ONE/FIVE}
'Yes, I have {one/five}'

In other words, when plural morphology on the nominal is lacking, either SG or PL interpretation is possible; when it is present, only the PL reading is.

One reasonable question to ask here (noted above) is whether in such a case PL marking is lacking or is zero (as argued by Pfau & Steinbach 2006, i.a. for DGS). The evidence from ASL points for the former.

Consider the well attested observation that conjunction preserves value (36) (Cruse 1986).

- (36) a. John saw gold
= John saw a pile of gold pieces / = John saw a piece of gold
b. John saw gold, and Mary did too
c. John and Mary saw gold
= John and Mary saw a pile of gold pieces / = John and Mary saw a piece of gold
≠ John saw a pile of gold pieces and Mary saw a piece of gold

In terms of number, this value preservation is demonstrated in (37) with overt plural marking on the noun.

- (37) a. JOHN SEE BALL+++ MARY SAME
'John saw a balls and Mary did too'
b. JOHN MARY SEE BALL+++ 'John and Mary saw balls'
≠ John saw one ball, and Mary saw multiple ball
≠ John saw multiple balls, and Mary saw one ball
= John and Mary saw a plurality of balls

The question then is what happens when the overt sign repetition/reduplication is removed. On the assumption that reduplication is PL, if PL becomes zero ($PL \rightarrow \emptyset$), the number value should be preserved, as in (36)-(37). However, as (38) shows, this is not what happens: without overt plural markings, both singular and plural readings are available.

- (38) a. JOHN SEE HORSE MARY SAME
 ‘John saw a horse/horses, and Mary did too’
 b. JOHN MARY SEE HORSE ‘John and Mary saw house/horses
 = John saw one horse and Mary saw multiple horse
 = John saw multiple horses and Mary saw one horse
 = John and Mary both saw either a single horse or a plurality of horses

We are now in a position to state a few interim conclusions: ASL is a language without numeral classifiers in the ‘traditional’ sense, but clearly with an overt morphological strategy for pluralization. This plural morphology really pluralizes: when morphologically plural, the noun must be interpreted as such, but when the noun is in its bare form, it is non-plural – i.e. there is no evidence for a zero exponent for PL (unlike what has been argued for DGS, e.g.). This finding strongly suggests that the apparent optionality of number marking must be revisited; yet the optionality appears undeniable at this stage – i.e. ASL is not a language that obligatorily marks its nouns for number, for when it does, this is unmistakable. Thus, returning to the suggestion in (15), we look to numerals and related items.

6. Numerals and related items

6. 1 Countability revealed

Ionin & Matushansky (2006) argue that numerals have restrictive adjectival semantics ($\langle\langle et \rangle, \langle et \rangle\rangle$). In ASL, this view is corroborated by ellipsis data. In such environments, the number associated with the elided element is simply ignored (as in (39)), much in the same way an adjective might in (40) (Author 2012, 2017).

- (39) A: THREE STUDENT JOIN 1-POSS CLASS
 ‘Three students joined my class’
 B: _____ DROP 1-POSS CLASS
 ‘_____ dropped my class’ = the same 3, different 3, 5, 10, any number of students

- (40) A: IX1 WANT GREEN CAR TODAY
 ‘I want a green car today’
 B: TEND WANT _____

‘(You) usually want ____ ’ = a green car, a red car, any color car.

However, at least in one environment, numerals and adjectives do not behave identically. Consider (41), where the quantifier and adjective attempt to move above the clause boundary. Boster (1996) argues that (41) represents a partitive structure in ASL.

- (41) a. ‘I want three books’
i. THREE IX-1 WANT BOOK
ii. BOOK IX-1 WANT THREE ~~BOOK~~
b. ‘I want a green car’
i. *GREEN IX-1 WANT CAR
ii. CAR IX-1 WANT GREEN ~~CAR~~ (Boster 1996)

The relevance of (41) here is as follows. Rothstein (2011) observes that numerical partitives (like (41a)) take only count nouns as complements while ‘*some of the*’ partitives can take either mass or count nouns (42); this is not particularly surprising considering the fact that numbers combine with count nouns only and the quantifier *some* with either mass or count nouns.

- (42) a. I want three of the books/*blood
b. I want some of the books/blood

Yet, recall that we have seen that mass Ns in ASL can do a number of things that put them squarely into the count category (see (13) vs. (12), repeated here as (43)).

- (43) a. WOW SHITarc+>+>+ HERE ~ (12a)
lit. ‘Wow, shit.PL are all over here’
b. PLEASE GIVE-1 THREE GOLD ~ (12b)
lit. ‘Please give me three gold’
c. WOW NEED MANY OIL FOR FOOD ~ (12c)
lit. ‘Wow, I need many oil for food’
d. IXa GOLD SMALL ~ (12d)
lit. ‘That gold a small.’
e. *Context: Mary’s wine barrel contains more wine (volume) than Peter’s 15 bottles*
PETER HAVE MORE WINE
‘Peter has more wine’ (true on number reading, false on volume reading) ~ (12e)

Therefore, we predict that if all ASL nouns can be interpreted as count (as argued for Yudja in Lima 2014, 2016, e.g.), both mass and count should be licit in partitive environments – i.e. there should be no contrast of the sort we saw in (42a). On the other hand, if there is a

difference between the two types of noun classes, this is precisely where it will show, despite the fact that up till now, no difference has been observed.

It turns out, per the latter prediction, despite being able to undergo pluralization and directly combine with numerals and count quantifiers (as in (42)), mass nouns cannot occur in partitive constructions (44a); only count nouns can (44b).

- (44) a. *BLOOD_i IX-1 WANT THREE / FEW BLOOD_i
‘I want three/a few bloods; *lit*: of blood, I want three/a few’
b. APPLE_i IX-1 WANT THREE / FEW APPLE_i
‘I want three/a few apples; *lit*: of apples, I want three/a few’

In other words, (44) finally reveals the countability distinction in ASL. This distinction was flushed out with movement.

Boster (1996) shows that the movement in question is best described in terms of topicalization. More generally, she demonstrates that this NP-Q split in ASL is a case of A-bar movement: just like topicalization and long-distance wh-movement, it obeys subadjacency, is allowed from an object but not from a subject QP, and from argument but not adjunct PPs. Assuming that both such movement and the landing site are blind to the countability distinction, we are left with the conclusion that BLOOD in (44a) and APPLE in (44b) must have originated in different positions: either BLOOD is above APPLE and is ineligible for movement because it is too close (e.g. Abels 2003), or BLOOD is below APPLE and is ineligible for movement to QP because it is too far. (45) below points towards the latter.

Recall the very first reason to suspect the existence of the mass-count distinction in ASL – the fact that what we can now confidently call mass and count nouns could not be conjoined, as in (16c) repeated below in (45a). Indeed, this is not entirely the case: the sentence can be made grammatical with an addition of a numeral/quantifier (45b).⁶

- (45) a. *GIVE-1 [BOOK disj-shift BLOOD] = (16c)
‘Give me a book and blood’
b. GIVE-1 [BOOK disj-shift FEW / THREE BLOOD]
‘Give me a book and a few/three blood’

Following Cruise (1986), among others, I had used conjunction a few times as a diagnostic. Here, this diagnostic strongly suggests that in (45), the constituent [BOOK] better resembles [THREE BLOOD] than [BLOOD] – i.e. it takes a *quantity of blood* to make the same

⁶ That the issue is not simply a quantifier scoping over the nouns is evident from (i) below, which remains ungrammatical:

- (i) *GIVE-1 FEW/THREE [BOOK disj-shift BLOOD]
‘Give me few/three books and blood’

size constituent as *book* (as has in fact argued in Chierchia 2010). Whatever the final analysis, the data in (45) record the elusive countability distinction in ASL as well as make clear the relative height of the two nouns with respect to one another – something along the lines of (46).

- (46) a. [BOOK [THREE [BLOOD]]]
b. [N_{count} [quantity[N_{mass}]]]

The pattern is productive: BUTTER, OIL, WATER, AIR, SAND, FLOUR, IMAGINATION, WOOD, SNOW behave along the lines of both (42) and (44a), and CHAIR, HOUSE, DISSERTATION, JACKET, GIRL pattern both with (42) and (44b).

Let us recall the original set of goals for this exploration. Because simply looking at the list of properties ordinarily associated with the countability distinction (Table 1) did not yield an answer we had hoped for, we turned to the suggestion in Chierchia (2010) (see (15)), expecting the countability distinction to be found either in the classifier (for the generalized classifier languages), in the number morpheme (for the obligatory number marking languages), or in the numeral (for the number neutral languages). It turns out that ASL is best defined as the number neutral language after all if ‘neutral’ here (‘general number’ in Corbett 2000) means something other than ‘obligatory’ in language like English, e.g. That is, in ASL, when PL is does not appear marked, it really is not marked, vs. being a zero-exponent (as argued for DGS by Pfau & Steinbach 2016) – ASL can be said to be neutral for number. And as expected in such a language, we found the countability distinction in a (type of) numeral (construction).

6.2. Towards the account of CL

On the one hand, the main question of this paper has been answered: despite apparent evidence to the contrary, ASL does not provide evidence against the universality of the mass-count distinction (Deal 2017). The second question – whether the language’s behavior here can be attributed to its number marking strategies – has been answered only partially.

It turns out that, despite the apparent (44a), mass nouns are not always ungrammatical in partitive constructions: the ungrammatical (44a) can be rescued by introducing into the structure a CL, as in (47).⁷

- (47) BLOOD_i IX1 WANT {THREE / FEW} CL^{container}₊>+>+> BLOOD_i
‘lit: Of blood, I want three/few CL’

⁷ This classifier is also optionally available for count nouns (see section 2).

(i) APPLE_i IX-1 WANT {THREE / FEW} CL^{large-container}₊>+>+> APPLE_i
‘I want three/a few apples; lit: of apples, I want three/a few’

As noted in section 1, ASL is a language that allows argument omission which, in turn, not only elides the argument but also ignores the quantifier/numeral (see (7)). As has been demonstrated elsewhere (Author 2012, 2017), what ASL does not allow is quantifier/numeral stranding (as in (48a)). Considering the work that we had observed the CL do throughout and particularly in (47), we might now expect it to be able to rescue the ungrammatical stranded quantifier/numeral in (48a). This is indeed what happens (as is in Turkish, see Boskovic & Sener 2014).

- (48) a. *MARY DROP {FEW/THREE}STUDENT, JOHN REGISTER {MANY/FIVE} ____
 ‘Mary dropped {a few/3}students, John registered {many/5}’
 b. MARY DROP {FEW/THREE}STUDENT, JOHN REGISTER {MANY/FIVE}
 CL_{person}.PL.
 ‘Mary dropped few students, John registered CL.PL’

Additionally, with some substance items in the sample (e.g. SAND), plural marking is also impossible unless the CL is used. This observation brings us back to Table 1 – recall, when we first began testing ASL nouns for the countability distinction, the language betrayed no differences between noun classes, nor did we see any varied behaviors with respect to cumulative (SUMS) vs. divisive (PARTS) properties. However, once again, now that we have discovered countability and the potential role of the classifiers the language’s ability to pass certain diagnostics, we might now also predict classifier involvement here as well. This is shown in (49) vs. (50). In (49a-b), on par with KID in (36) and HORSE in (38), SAND is interpreted as either SG or PL – not specified for number; the value is preserved under conjunction. In (49), however, this changes: both John and Mary must have seen a plurality of items and what they saw made of sand depends on the CL (a tall object vs. a boxed object, etc.).

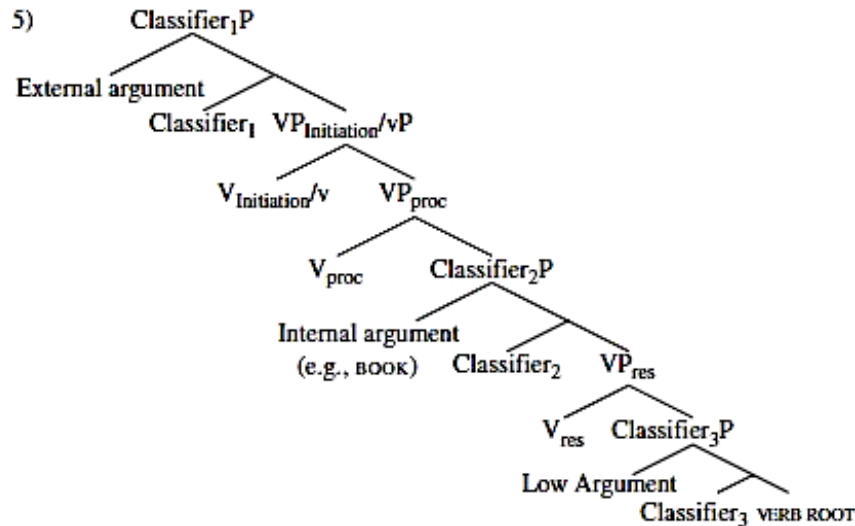
- (49) a. JOHN SEE SAND MARY SAME
 ‘John saw sand, and so did Mary’ => John:1 sand castle, Mary:5 sandboxes
 b. JOHN MARY SEE SAND
 ‘John and Mary saw sand’ => John:1 sand castle, Mary:5 sandboxes
 c. *JOHN MARY SEE SAND+++ ‘John and Mary saw sand.PL’

- (50) a. JOHN MARY SEE SAND CL^{tall-object}+++
 ‘John and Mary saw tall sand objects’
 => John: 5 sand castles, Mary: 5 #sandboxes / oksand castles
 ≠> John: 1, Mary: 5 / ≠> John:5, Mary: 1
 b. JOHN MARY SEE SAND CL^{box}+++
 ‘John and Mary saw box-shaped sand objects’
 => John: 5 #sand castles / oksandboxes, M: 5 sandboxes
 ≠> John: 1, Mary: 5 / ≠> John:5, Mary: 1

In other words, the CL is doing the work here as well.

Up till now, the literature on CL projection in ASL has strongly advocated for a predicative view of CLs, demonstrating that even within this particular approach there are three separate positions for CLs which involve complex movements within various relevant phrases, as in *Figure 2* (see Abner 2017 and references therein).

Figure 2. Structure of CLP (Abner 2017 (45))



The data presented here promise to contribute to this literature but also show that focus on a different set of properties of CLs is needed: it is not immediately clear how any of the classifier projections in *Figure 2* could differentiate between mass and count nouns in (44) and (45).

Further, the fact that (50) offers at least two options for the ‘rescue’ based on which types of CLs the language has in its repertoire, which subsequently affects the interpretation, leads to yet another prediction: if the language does not possess a classifier for a particular type of entity, a rescue operation à la (47) will be unavailable. This prediction is borne out in (51): ASL does not have a CL for IMAGINATION – it is not a human or an entity that can serve as an instrument or be handled (Benedicto & Brentari 2004, i.a.), and the sentence is ungrammatical.

- (51) *IMAGINATION IX1 WANT MANY/MUCH CL
‘lit: Of imagination, I want a lot CL’

The data in this section lead to particular conclusion: without a CL, a mass noun (substance) cannot be ‘partitioned’ syntactically (to the degree that this is what a partitive construction does), despite the fact that it can pass semantic diagnostics targeting both cumulativity (SUMS) and divisiveness (PARTS), as in *Table 1*. For other nouns, the CL may help pass either PARTS or SUMS (cf. (49)). This observation alone offers support for the two semantic features of count nouns separately (see Deal 2017 for the discussion). The data here

also casts a shadow on individual diagnostics in Table 1, demonstrating instead that they need to be considered as a complex interplay of factors.

7. Conclusions and Directions

The main goal of this paper was to examine nouns in ASL for two properties: the countability distinction and number marking, following the large body of literature documenting the interaction of the two. We have discovered that overall, ASL presents as a language that does not mark number obligatorily, but number is, in fact marked. Crucially, when overt number marking is absent, so is PL – i.e. ASL is different from DGS, e.g. I leave for future research the syntactic position of number marking (Witschko 2008, Kramer 2017, i.a.).

The most surprising fact about ASL – one that served as the point of departure for the data – was that despite what looks like the evidence to the contrary, ASL encodes mass-count distinction after all (Chierchia 2010, Deal 2017). The distinction was not observable via the typical diagnostics (*Table 1*); instead, we had to find it via partitive constructions. What exactly is the interaction between the semantics of partitivity and individuation (Rothstein 2011) and constraints on the (A-bar) movement involved in the relevant cases will need to be worked out; I have offered some preliminary conclusions here. That said, however, the data strongly suggest the following: previous work has explicitly claimed that ASL nouns should be treated on par with nouns in languages like Mandarin – languages in which all nouns have been argued to be mass (Chierchia 1998, e.g.) and which are known as generalized classifier languages. The data presented here reveals that ASL does not parallel such languages neatly.

Moreover, recall that ASL is a language without a definite article (see (3)). In such languages, nouns are expected to be able to type-shift (when contextually appropriate) and thus to be able to comfortably exist in anaphoric contexts (Despic 2017). However, while generally bare NPs are fine in anaphoric environments in ASL (cf. (3)), kinds resist such contexts (as in (52)). I take (52) as preliminary evidence against the type-shift at will for ASL nouns.

- (52) POSS-1 FAMILY GENERATION MAKE WINE. #DRINK AMAZING
‘My family has been making wine for generation. (This) drink is amazing’
#if DRINK refers to WINE = no anaphoric reference to a kind

One aspect of number marking that deserves much attention is the syntax of CLs. ASL does not behave like a general classifier language; yet, the data suggest an additional projection encoding quantity. The data presented here lead to the conclusion that, while different from the well-known East-Asian count classifiers, CLs in ASL are nonetheless doing the work of partitioning the NP and, therefore, perhaps this projection may look something like Cheng & Sybesma 1998’s CLP. The aforementioned is evident from the fact that some (count) but not other (mass) nouns can A-bar move into a partitive construction and split the NP from the

quantifier without the aid of CLs. The literature on CLs in ASL analyzes them as predicative structures; yet, these predicates remain part-and-parcel of the ‘rescue’ cases in the nominal domain. Thus, the data offered here promises to further our understanding of classifier constructions.

Among other conclusions that have arisen through this examination are these: ASL D-quantifiers may not be a reliable diagnostic for mass-count distinction, or ASL offers evidence for a particular view of mass/count distinction -- one whose semantics disallow Ns that are in principle cut-able/have minimal parts (e.g. Link vs. Chierchia 1998, Bale & Barner 2009).

Finally, elsewhere I have argued that ASL NP is both X_{\min} and X_{\max} (Author 2012, 2017). The CLP data cast a shadow on this view forcing a further articulation of the nominal domain. At any rate, whether Ns generate in the relevant projections or arrive there by movement, the difference between mass/count Ns appears ontological, not grammatical. In this, ASL contributes to the general debate on that continues to rage in the literature on the mass-count distinction.

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