

## The count-mass distinction in Central Kurdish

**Abstract.** This paper aims to advance understanding of Central Kurdish by testing the applicability of the countability analysis proposed by Wiese & Mailing (2005) in light of new data on countability in Central Kurdish. In particular, novel countability data shows that the previous analysis does not capture the full complexity of the countability system in Central Kurdish. To capture this complexity, I adopt and extend theory of countability proposed in Sutton & Filip (2016) to account for the novel data. Contrary to the assumption made by Wiese & Mailing (2005) that Central Kurdish is an optional classifier language without a count-mass distinction, I argue that Central Kurdish is an optional classifier language with both a count-mass distinction and additional grammatical features that have not yet been discussed in analyses of countability.

**Keywords.** countability, count, mass, classifiers, Central Kurdish

### 1. Introduction

The main claim of this paper is that Central (Sorani) Kurdish is a classifier language with a count-mass distinction. In a classifier language, constructions involving counting, like *four doors*, typically require the use of a classifier, exemplified in (1) where *dane* (CL<sub>INANIMATE</sub>) is the classifier used for inanimate objects. Broadly defined, a classifier is a linguistic element that imparts specific information about the entities being counted. Further background about counting constructions in Central Kurdish will be provided in Section 2.

(1) çwar dane      derga  
    four CL<sub>INANIMATE</sub> door  
    ‘four doors’

The concept of count-mass distinction, on the other hand, involves categorizing nouns based on their countability. For example, in English, *door* is considered a count noun as it can directly combine with number words, while *hardware* is classified as a mass noun as it does not seamlessly combine with number words (i.e. *four hardwares* is odd and rarely, if ever attested in US-American English). The claim that Central Kurdish is a classifier language with a count-mass distinction contradicts the only existing formal analysis of countability in Central Kurdish, presented by Wiese & Mailing (2005). This claim contributes to the advancement of the theory about Central Kurdish, challenging the previous assumption that Central Kurdish lacks a count-mass distinction. Section 3 will present data that challenges this assumption.

Wiese & Maling (2005) assume that since all bare nouns can be counted with classifiers in Central Kurdish, they all have transnumeral reference, i.e. the nouns all have singular and plural reference, and that classifiers are necessary to specify the singular individuals that are countable. According to their analysis, Central Kurdish nouns are mass nouns: they assume that if a bare noun has singular reference, then it is a count noun, while if a noun has transnumeral reference, then it is a mass noun. This implies that, according to Wiese & Maling (2005), all Central Kurdish nouns fall under the category of mass nouns. This, and other analyses of the count-mass distinction will be reviewed in Section 2.

In constructing a formal semantic analysis of the count-mass distinction in Central Kurdish, several standard and novel assumptions will be made to account for the novel data presented in this study. The current analysis adopts a standard mereological theory of nominal semantics in which individuals and sums thereof are of the same semantic type, as originally proposed by Link (1983). In short, this means that the entities that nouns refer to can be conceptualized as singular individuals and their sums, e.g. *door* refers to single doors, and

*doors* refers to sums of doors. Following Krifka (1989), I assume that the sum operation,  $\sqcup$ , is used to make sums of individuals—so if *a* and *b* are individual doors, then *a* $\sqcup$ *b* is their plural sum. I will also assume many other standard semantic operations such as pluralization and definiteness, as defined in various analyses of countability (e.g. Link 1983; Krifka 1989). The unique assumptions will be elaborated further in Section 4, though in short, they include the assumption that plural nouns cannot be counted in Central Kurdish because of how plural morphology is intertwined with definiteness in the language. As discussed more extensively in Section 5, this paper ultimately advocates for a new perspective on countability in Central Kurdish, showing how a theory of countability can be extended to account for the countability system in this language.

## 2. Background

Grammars of Central Kurdish, as presented in works like Thackston (2006) and Kim (2010), state that, when counting in Central Kurdish, the classifiers such as *dane* (for inanimate objects) and *sa(fo)r* (for non-human animates) are used in most cases, but the classifier *nefer* (for humans) is optional. In example (2), we observe the use of the non-human animate classifier for counting sheep, the standalone human classifier for counting people, and the absence of a classifier for counting days.

- (2) a. de ser meř  
 ten CL<sub>animate</sub> sheep  
 'ten sheep'  
 b. penc nefer  
 five CL<sub>human</sub>  
 'five people'  
 c. dũ řoj  
 two day  
 'two days'

(Thackston 2006, p. 18)

In (3b), we also see *tā* 'piece' being used to count apples and in (3a) that nouns like *sew* 'apple' can refer to single apples or pluralities of apples.

- (3) a. sew-m krī  
 apple-1.SG.ERG bought  
 'I bought {an apple/apples}'  
 b. sē (tā) sew  
 three piece apple  
 'three apples'

(Wiese & Maling 2005, p. 13)

While bare nouns, i.e. those without plural morphology, can refer to single individuals and pluralities, grammars also show that Central Kurdish has plural morphology that occurs with both the definite and indefinite affixes.

- (4) a. derga door  
 'door'  
 b. derga-yan door-INDF.PL  
 '(some) doors'  
 c. derga-k-an door-DEF-PL  
 'the doors'

(Thackston 2006, p. 8-9)

Because bare nouns in Central Kurdish can refer to a single instance or multiple instances of a particular entity, they have, what Wiese & Maling (2005) call *transnumeral* reference, akin to Corbett's (2000) *general number* and Erbach et al.'s (2019) *number neutral* reference. This can be contrasted with English nouns which are assumed to have either strictly singular reference, e.g. *cow* refers to a single instance and *cows* to multiple instances, possibly including

instances of one cow depending on one's chosen theory of plural nouns. Wiese & Maling (2005) characterize all nouns in Central Kurdish as marked [+tn] for transnumeral reference, while nouns like *dog* in English are [-tn] to indicate that they do not have transnumeral reference, rather it is singular reference. However, similar to all nouns in Central Kurdish, Wiese & Maling (2005) assume that certain nouns in English are also [+tn], particularly nouns like *water* which generally refer to both singular and plural instances, e.g. *She drank water* could refer to the consumption of either a single portion or multiple portions of water.

The distinction in English between [-tn] nouns and [+tn] nouns, as argued by Wiese & Maling (2005), is posited to be the source of the count-mass distinction: count nouns are [-tn] and mass nouns are [+tn]. Because *cow* is [-tn], it specifies individuals that can be directly counted, e.g. *two cows*. Conversely, since *water* is [+tn], it does not specify individuals that can be counted and requires a mensural numeral classifier like *portion* in order to be counted, or it can be counted in terms of subkinds. In other words, for Wiese & Maling (2005) the [-/+tn] distinction within a language is equivalent to the count-mass distinction: [-tn] nouns are count and [+tn] nouns are mass. Because Wiese & Maling (2005) characterize all nouns in Central Kurdish as [+tn], or mass, there should be no distinction between groups of nouns in Central Kurdish that looks like the count-mass distinction.

The count-mass distinction is primarily a morphosyntactic distinction wherein nouns can be characterized as count, mass, or both, depending on the morphosyntactic contexts in which they appear. In addition to counting constructions, which distinguish *cow* from *mud* since *cow* combines directly with numbers as in *two cows* while *mud* needs a specified unit to be counted as in *two (pieces/liters/kinds/buckets of) mud*, there are many other contexts in English that distinguish count from mass. Words like *each*, *every*, *many*, *both* and *a(n)* can all be used to distinguish a noun as countable, whereas words like *much* and *little* can distinguish a noun as mass. These many ways of distinguishing count from mass and can be used to distinguish different classes of nouns.

While Wiese & Maling (2005)'s account of classifier languages does not allow for a count-mass distinction in these languages, it has long been noted that classifier languages indeed do have such a distinction. For example, Cheng & Sybesma (1998) argued that the distribution of sortal classifiers versus mensural classifiers in Mandarin is a way of distinguishing count nouns and mass nouns in a classifier language. Sortal classifiers are those that pick out singular entities, akin to the classifiers mentioned in Central Kurdish, while mensural classifiers are those that name a unit of measurement or containment like *liter* or *glass*. Erbach et al. (2021) have also shown that the noun modifier *nan-byaku to iu* 'hundreds of' distinguishes count nouns from mass nouns in Japanese questionnaires.

Various theories have been proposed to account for classifier languages with count-mass distinction (e.g. Cheng & Sybesma 1998; Doetjes 2017; Erbach et al. 2019; Chierchia 2021). For example, Erbach et al. (2021) essentially assume that when referring to instances as opposed to kinds, nouns in classifier languages have nominal semantics no different from those in languages like English, and classifiers are assumed to shift number words from denoting numbers to being predicates that can modify nouns. To explain an optional classifier in Hungarian, Erbach et al. (2019) assume that classifiers serve to restrict the counting context from one that is ambiguous between instances and kinds (e.g. three specific cows or three kinds of cows), to one that specifically counts instances.

Moreover, Hungarian nouns, like Central Kurdish nouns, are assumed to be transnumeral. However, for Erbach et al. (2019), the idea that all nouns are transnumeral does not rule out the possibility of a language having a count-mass distinction. Rather than basing the count-mass distinction on being [-tn] or [+tn], Erbach et al. (2019) assume that reference to quantized individuals is what distinguishes count nouns from mass nouns, following Sutton & Filip (2016). Nouns with quantized reference are those that refer to things that cannot be part of one another and referred to by the same word. For example, while a chair and part of a chair cannot both be referred to with *a chair*, a portion of water and a part of that portion can both

be referred to with *water*. Thus, *chair* has quantized reference, whereas *water* does not. Nouns in Hungarian are therefore assumed to refer in two ways, one is the reference to singular individuals and multiples thereof, making the nouns [+tn], while the other is the reference to quantized singular individuals or not. The formal characteristics of this analysis will be reviewed further in Section 4.

While Wiese & Maling's (2005) analysis of Central Kurdish does not allow for the language to have a count-mass distinction, Erbach et al's. (2019) analysis would permit it. What has not yet been examined is why morphologically plural nouns cannot be counted in languages with both classifiers and plural morphology, such as Hungarian and Central Kurdish. In other words, it is unclear whether Central Kurdish has the grammatical reflexes of a count-mass distinction that require an analysis like Erbach et al. (2019), or if an analysis like Wiese & Maling (2005) is sufficient. The next section will review data that suggest that an analysis like that of Erbach et al. (2019) is necessary for Central Kurdish.

### 3. Data

The data for this paper comes from Erbach & Kheder (2024), wherein semantic fieldwork (Matthewson 2004) is the methodology for aggregating speaker judgments about constructed sentences in Central Kurdish. The Central Kurdish speaking author of the aforementioned paper constructed sentences with various nouns and noun modifiers to test whether Central Kurdish had a count-mass distinction in addition to having a classifier system. The present paper focuses on the data pertaining to the optionality of classifiers, and the distribution of plural morphology and noun modifiers. Following Matthewson (2004), consultants were asked to assess if the sentences could be judged as true and made sense. The consultants themselves are all originally from Erbil, Iraq.

The consultants all had uniform judgments for the following cases; whether classifiers were optional, whether plural morphology could be used, and whether the modifier *herdû* 'both' could be used with the given nouns. The identical set of 16 nouns were tested in each of these three contexts. The results indicate that classifiers were optional for certain nouns but obligatory for others. For example, in (5), a classifier is not necessary for counting with nouns like *qondre* 'shoe', but it is required for counting with nouns like *aw* 'water' as in (6).

(5) Sê qondre-y de-bîn-im le.sar ardî.  
 Three shoe-OBL IPFV-see.PRS-1SG:A on floor  
 'I see three shoes on the floor.'

(6) Sê #(gom)-aw-ê la.ser ardî de-bîn-im  
 three puddle-water-OBL on floor IPFV-see.PRS-1SG:A  
 'I see three puddles of water on the floor.'

Plural morphology can be used on certain nouns, including *çaqo* 'knife' in (7), but not on others, like *befr* 'snow' in (8).

(7) Şef-eke hemû çaqo-ak-an-î tiş kird.  
 chef-DEF all knife-DEF-PL-1SG:A sharp make  
 'The chef sharpened all the knives.'

(8) Befr-#(an)-î de-bîn-im le ardi!  
 snow-PL-OBL IPFV-see.PRS-1SG:A on floor.OBL  
 'I see snow#(s) on the floor!'

Lastly, *herdû* 'both' can modify certain nouns, like *seyyare* 'car' in (9), but not others, like *bawîl* 'luggage' in (10).

- (9) Herdû seyyare-k-an ʕeynen siʕer (e).  
 both car-DEF-PL same price COP.PRS.3SG  
 ‘Both cars cost the same amount.’
- (10) # Her pîsatî-yek-im le.ser herdû bawîl-î-m xawên kird.  
 all dirt-INDF-1SG:A on both luggage-OBL1SG:GEN clean LV.PST  
 #‘I cleaned all of the dirt off of both luggage.’

Using these three contexts, optional classifiers, plural morphology, and modification with *herdû* ‘both’ with 16 different nouns resulted in two classes of nouns. Those that were acceptable in these contexts are *qondre* ‘shoe’, *çaqo* ‘knife’, *seyyare* ‘car’, *derga* ‘door’, *mleke* ‘spoon’, *minal* ‘child’, *name* ‘letter’, and *defr* ‘pot’. The nouns that were not acceptable in these contexts are *aw* ‘water’, *befr* ‘snow’, *bawîl* ‘luggage’, *hengwîn* ‘honey’, *hummus*, *pîsatî* ‘dirt’, *gur* ‘mud’, and *xîn* ‘blood’. Notably, while most nouns that are not used in these contexts refer to substances, e.g. *aw* ‘water’, *befr* ‘snow’, some refer to discrete solid objects—e.g. *bawîl* ‘luggage’.

#### 4. Analysis

The data from Erbach & Kheder (2024) paint a clear picture that Central Kurdish does indeed exhibit a count-mass distinction. Thus, the analysis proposed by Wiese & Maling (2005), in which nouns being [+tn], i.e. referring to singular individuals and pluralities, categorizes them as mass nouns will not suffice to account for the data in Section 3. Nouns in Central Kurdish, while [+tn] as they refer to singular individuals and pluralities, exhibit characteristics of either count or mass nouns. They can either be counted without classifiers, combine with plural morphology, and be modified by *herdû* ‘both’, making them count nouns, or they cannot, in which case they are mass nouns. Given the same sort of characteristics were seen in Hungarian in Erbach et al. (2019), it seems apt that the analysis therein be applied to Central Kurdish, as will be discussed in this section.

To capture the complexities of nominal semantics, Erbach et al. (2019) follow Landman (2011) and Sutton & Filip (2016) among others, who assume that nouns refer in multiple ways. In other words, they are considered tuples of predicates rather than being a single predicate as assumed elsewhere. The first predicate in the tuple is the extension, and refers to the individuals in a given context, and the second predicate in the tuple refers to the individuals that can be counted, which might not be anything for mass nouns like *mud*, in which case the second predicate is functionally equivalent to the first predicate.

This theory allows for a count mass distinction based on whether the second predicate in the nominal tuple has quantized reference. To have quantized reference, a nominal predicate cannot refer to any two things that are parts of one another. For example, a pair of single beds might be considered two beds in contexts where they are separate, but when pushed together, they might be counted as one. To be quantized, the term *bed* must not represent a situation where a single bed is composed of two things, one of which is also a bed. However, Sutton & Filip (2016) see quantization as context-dependent, considering two beds being one in one context is a quantized set, and the same two beds being two in another context as another quantized set. Assuming two beds are both two and one in the same context is not quantized set of beds, and therefore cannot be referred to by a count noun but perhaps by the mass noun *bedding*, which, by rule, cannot refer to a disjoint set of countable individuals.

The two predicates in the nominal tuples assumed here both involve a series of operations on the nominal root—e.g. DOOR in (11)—which is type  $\langle e, t \rangle$ . The first operation on the root is the individuation operation,  $IND_{\langle \langle e, t \rangle, \langle e, t \rangle \rangle}$ , which introduces a counting schema argument if possible. For example, it is assumed that *air* does not refer to countable objects in

any sense, so the individuation operation does not identify any countable individuals, while *bed* and *furniture* do refer to countable individuals, which are identified by the individuation operation. The next operation is the counting schema,  $C_{\langle\langle e,t \rangle, \langle e,t \rangle\rangle}$ , which is contextually sensitive. For a pair of single beds that might be considered two beds in one context but counted as one in another context, the individuation function would identify both possibilities, and the counting schema would identify whether the two beds are counted as one or two. If a specific counting schema is being used,  $c_i$ , then a quantized set of countable individuals is identified, and the noun is a count noun. If the null counting schema is used,  $c_0$ , and if the set of countable individuals is not quantized. For example, *bedding* would refer to both the beds as separate and as one, while *bed* or *beds* would be used to refer to the pair as one or the pair as separate, respectively. In the first predicate of the tuple, the semantic pluralization operation,  $*$ , is also used to generate sums of individuals, thereby making the nouns transnumeral. This theory of countability is formalized with lambda calculus in (11) with the Central Kurdish nouns *derga* ‘door’ and *bawîl* ‘luggage’, where English is used for the nominal roots given the language of this paper is also English.

- (11) a.  $\llbracket \text{derga} \rrbracket^{c_i} = \lambda x. \langle *c_i(\mathbf{IND}(\text{DOOR})(x), \lambda y. c_i(\mathbf{IND}(\text{DOOR})(y), \emptyset) \rangle$   
 b.  $\llbracket \text{bawîl} \rrbracket^{c_i} = \lambda x. \langle *c_0(\mathbf{IND}(\text{LUGGAGE})(x), \lambda y. c_0(\mathbf{IND}(\text{LUGGAGE})(y), \emptyset) \rangle$

In (11), note that there is a third, null predicate,  $\emptyset$ , in each tuple, which is necessary for straightforward composition with noun modifiers. The specific counting scheme,  $c_i$ , in the formalization of *derga* ‘door’ ensures that only disjoint sets of countable individuals are referred to. For example, a single doorway may contain a single door or a double door, which might be referred to as one or two doors depending on the context. As with *bedding* in English, *bawîl* ‘luggage’ is assumed to be encoded with a null counting schema making it a mass noun that refers to overlapping countable individuals that can be made disjoint and counted with the use of a sortal numerical classifier.

To ensure that plural morphology only occurs with count nouns, one can posit that plural morphology only combines with a noun if the noun’s second predicate is quantized. I will assume a quantization function, QUA, to perform this check. Plural morphology, *-an*, in (12) is formalized in a way very similar to the nouns in (11), however it includes two functions, other than the quantization function, that have not been introduced yet. The functions  $\pi_1$  and  $\pi_2$  are assumed to select the first and second predicate respectively from the tuple,  $P$ , that is being modified (12).

- (12) If  $X = \langle \phi, \psi, \chi \rangle_{\langle a \times b \times c \rangle}$ , then  $\pi_1(X) = \phi_a$  and  $\pi_2(X) = \psi_b$

The first predicate of plural morphology contains the function  $\pi_1$  and therefore simply selects the first predicate of the noun it modifies. So, if *-kan* (DEF.PL) is modifying *derga* ‘door’ to form *dergakan* ‘the doors’, then the first predicate of *dergakan* ‘the doors’ is the definiteness operation,  $\sigma$ , operating on the first predicate of *derga* ‘door’ to point to the particular definite entity in that context. The second predicate in plural morphology is a function to measure to cardinality of the second predicate of the noun being modified, and it must measure greater than one, thereby ensuring plural reference. The third predicate of plural morphology is the quantization function, QUA, that operates on the second predicate of the noun being modified.

- (13) a.  $\llbracket \text{-kan} \rrbracket^{c_i} = \lambda P. \lambda x. \langle \sigma(\pi_1(P(x))), \mu_{\text{CARD}}(x, \pi_2(P(x))) > 1, \text{QUA}(\pi_2(P(x))) \rangle$

$$\begin{aligned} \text{b. } \llbracket \text{dergakan} \rrbracket^{ci} &= \lambda x. \langle \sigma(*c_i(\mathbf{IND}(\text{DOOR}))(x)), \\ &\quad \mu_{\text{CARD}}(x, \lambda y. c_i(\mathbf{IND}(\text{DOOR}))(y)) > 1, \\ &\quad \text{QUA}(\lambda y. c_i(\mathbf{IND}(\text{DOOR}))(x)) \rangle \end{aligned}$$

The formalization for indefinite plural morphology would essentially look the same except that it would contain the existential quantifier,  $\exists$ , thereby encoding indefiniteness, rather than having the definite operator,  $\sigma$ .

The formalization of *herdû* ‘both’ in (14) is essentially the same as plural morphology, but it measures cardinality of exactly two. Due to redundancy, the repetitions of the two measure and two quantization operations are omitted from the formalization of *herdû dergakan* ‘both doors’.

$$\begin{aligned} (14) \text{ a. } \llbracket \text{herdû} \rrbracket^{ci} &= \lambda P. \lambda x. \langle \pi_1(P(x)), \mu_{\text{CARD}}(x, \pi_2(P(x))) = 2, \text{QUA}(\pi_2(P(x))) \rangle \\ \text{b. } \llbracket \text{herdû dergakan} \rrbracket^{ci} &= \lambda x. \langle \sigma(*c_i(\mathbf{IND}(\text{DOOR}))(x)), \\ &\quad \mu_{\text{CARD}}(x, \lambda y. c_i(\mathbf{IND}(\text{DOOR}))(y)) = 2, \\ &\quad \text{QUA}(\lambda y. c_i(\mathbf{IND}(\text{DOOR}))(x)) \rangle \end{aligned}$$

To account for optional classifiers, I follow Wiese & Mailing (2005) in assuming that there are morphologically null classifiers in instances where nouns combine directly with numbers such as in *çwar derga* ‘four doors’. However, I deviate from them in assuming that classifiers only specify countable individuals. I will assume that number words like *çwar* ‘four’ refer to numbers as in (15a) (cf. Bale & Coon 2014). In order to combine with a noun like *derga* ‘door’, either a morphologically null classifier, MOD, or a morphologically overt classifier like *dane* (CL<sub>INANIMATE</sub>) is required to turn the number word into a predicate that can then modify a noun. To ensure that numbers only combine directly with count nouns, I assume that the morphologically null classifier MOD contains a quantization requirement, and it will otherwise look like plural morphology or *herdû* ‘both’, except that it will measure for the number in question. *Dane* (CL<sub>INANIMATE</sub>), on the other hand, has to be able to count both count nouns and object mass nouns like *bawil* ‘luggage’, so it is assumed to contain its own specific counting schema,  $c_i$ , that over-writes the null counting schema,  $c_0$ , of object mass nouns it combines with. Additionally, the third predicate of *dane* (CL<sub>INANIMATE</sub>) specifies that all entities referred to by the noun in question are inanimate. Given that only bare nouns are counted in Central Kurdish, as opposed to nouns with plural morphology, the first predicate will also be measured to ensure that it is greater than or equal to the specified number. Counting the first predicate ensures that a definite, singular entity is not referred to unless the number of entities being counted is simply ‘one’.

$$\begin{aligned} (15) \text{ a. } \llbracket \text{çwar} \rrbracket &= 4 \\ \text{b. MOD} &= \lambda n. \lambda P. \lambda x. \langle \pi_1(P(x)), \mu_{\text{CARD}}(\pi_1(P(x)), \pi_2(P(x))) = n, \text{QUA}(\pi_2(P(x))) \rangle \\ \text{c. } \llbracket \text{dane} \rrbracket^{ci} &= \lambda n. \lambda P. \lambda x. \langle \pi_1(c_i(P(x))), \\ &\quad \mu_{\text{CARD}}(\pi_1(P(x)), c_i(\pi_2(P(x)))) = n, \\ &\quad \text{QUA}(c_i(\pi_2(P(x)))) \wedge \forall z. z \in x \rightarrow \text{INANIMATE}(z) \rangle \\ \text{d. } \llbracket \text{çwar derga} \rrbracket^{ci} &= \text{MOD}(\llbracket \text{çwar} \rrbracket)(\llbracket \text{derga} \rrbracket^{ci}) \\ &= \lambda x. \langle *c_i(\mathbf{IND}(\text{DOOR}))(x), \\ &\quad \mu_{\text{CARD}}(*c_i(\mathbf{IND}(\text{DOOR}))(x), \lambda y. c_i(\mathbf{IND}(\text{DOOR}))(y)) \geq 4, \\ &\quad \text{QUA}(\lambda y. c_i(\mathbf{IND}(\text{DOOR}))(x)) \rangle \end{aligned}$$

$$\begin{aligned}
\text{e. } \llbracket \text{\textit{çwar dane derga}} \rrbracket^{ci} &= \llbracket \text{dane} \rrbracket^{ci}(\llbracket \text{\textit{çwar}} \rrbracket)(\llbracket \text{derga} \rrbracket^{ci}) \\
&= \lambda x. \langle *c_i(\mathbf{IND}(\text{DOOR})(x), \\
&\quad \mu_{\text{CARD}}(*c_i(\mathbf{IND}(\text{DOOR})(x), \lambda y. c_i(\mathbf{IND}(\text{DOOR})(y)) \geq 4, \\
&\quad \text{QUA}(\lambda y. c_i(\mathbf{IND}(\text{DOOR})(x)) \wedge \forall z. z \in x \rightarrow \text{INANIMATE}(z)) \rangle
\end{aligned}$$

Counting the indefinite plural is assumed to be blocked for the same reason as counting the definite plural, namely the first predicate refers to a single individual. In the case of the indefinite plural, it merely refers to one plurality of which the predicate is true, rather than the maximal sum within the context.

To summarize the formal analysis, I have assumed the theory of countability in Sutton & Filip (2016) and extended it to account for the data in Central Kurdish, assuming that classifiers (including the null classifier) count both the first and second predicates of nouns, i.e. the extension and the base of individuals being counted. This assumption can elucidate why only bare nouns are counted, following Wiese & Mailing (2005) in assuming that bare nouns in Central Kurdish are transnumeral. Concerning the dual modifier *herdû* ‘both’, only the base of individuals is counted, not the extension, allowing the modifier to modify morphologically plural nouns as seen in the data.

## 5. Discussion

The present analysis has extended the theory of countability in Sutton & Filip (2016) to account for the count-mass distinction in Central Kurdish established by Weise & Mailing (2005), Central Kurdish is an optional classifier language with a morphologically null classifier present when no morphologically overt classifier is used. While Erbach et al. (2019) extended the analysis of countability in Sutton & Filip (2016) to another language with optional classifiers, namely Hungarian, the present analysis goes a step further in accounting for why plural nouns cannot be counted in such languages and addresses the dual modifier *herdû* ‘both’ in Central Kurdish. The present analysis only builds on Sutton & Filip (2016) as a matter of example, and is not meant to argue that other analyses (e.g. Chierchia 2021) are not compatible. On the contrary, other theories of countability could be extended and/or modified to fit with the present data. The key argument here is that relying solely on transnumerality to explain countability in Central Kurdish is inadequate for explaining the available data.

The present account assumes that plural nouns cannot be counted because both the first and second predicates in the tuple of a noun are measured for the relevant cardinality. For an instance of a noun like *derga* ‘door’, where it refers to four doors, the present theory assumes that the first predicate of *derga* ‘door’ refers to a set of four individual doors and sums of those doors. For example, if we assume that *a*, *b*, *c*, and *d*, are doors, then the first predicate of *derga* ‘door’ is the set in (16i). The second predicate of *derga* ‘door’ is assumed to refer to a quantized set of doors, specified by the specific counting schema, *c<sub>i</sub>*, which we can assume is simply the set in (16ii). So, when counting *çwar derga* ‘four doors’, the present theory assumes that both sets in (16) are counted to be higher than four.

$$(16) \llbracket \text{derga} \rrbracket^{ci} = \lambda x. \langle *c_i(\mathbf{IND}(\text{DOOR})(x), \lambda y. c_i(\mathbf{IND}(\text{DOOR})(y), \emptyset$$

- i.  $\{a, b, c, d, a \cup b, a \cup c, a \cup d, b \cup c, b \cup d, c \cup d, a \cup b \cup c, a \cup b \cup d, b \cup c \cup d, a \cup b \cup c \cup d\}$
- ii.  $\{a, b, c, d\}$

The plural noun *dergakan* ‘the doors’ cannot be counted because its first predicate only refers to one singular entity, namely the maximal sum of all doors referred to. Assuming the same context where there are the four doors *a*, *b*, *c*, and *d*, the first predicate of *dergakan* ‘the doors’ therefore refers to the set in (17i) while the second predicate refers to the set in (17ii), the latter of which indeed has a cardinality of four, but the former has a cardinality of one. Therefore,



while the second predicate of *dergakan* ‘the doors’ is quantized, the first predicate is not greater than four, so speakers do not say *çwar dergakan*.

$$(17) \llbracket \text{dergakan} \rrbracket^{ci} = \lambda x. \langle *c; (\mathbf{IND}(\text{DOOR})(x)), \\ \mu_{\text{CARD}}(x, \lambda y. c; (\mathbf{IND}(\text{DOOR})(y))) > 1, \\ \text{QUA}(\lambda y. c; (\mathbf{IND}(\text{DOOR})(x))) \rangle$$

- i. {a, b, c, d}
- ii. {a, b, c, d}

While the present analysis explains why *herdû* ‘both’ can combine with morphologically plural nouns, further research is needed to determine whether *herdû* ‘both’ can combine with bare nouns, i.e. those without plural morphology. If constructions like *herdû derga* ‘both doors’ are not grammatical in Central Kurdish, then it would have to be assumed that *herdû* ‘both’ has a definiteness requirement in its third predicate rather than a quantization requirement. This definiteness requirement could be conceived of as a measure function that counts a cardinality of one of the first predicate of the noun being modified since the definiteness operation,  $\sigma$ , narrows reference to a single individual, or a single sum of individuals, which would be counted as one entity in either case.

There is a significant amount of unexplored data regarding countability in Central Kurdish that could provide insights into how countability works in this language. For example, exploring whether or not bare nouns in Central Kurdish are kind referring, as assumed in classifier languages, and examining whether or not plurals have exclusive or inclusive reference, similar to Turkish, may require a wholly different analysis of the aforementioned data. For example, challenging transnumeral analyses of bare nouns and exclusive analysis of plurals in Turkish, Sağ (2022) builds on novel data of kind predication and previous data on plural reference, suggesting that bare nouns may have singular reference and plural nouns may have inclusive reference (see Sağ 2022 i.a.). This goes to show that a great deal more research is needed to truly understand nominal reference in Central Kurdish and the intricacies of countability more broadly.

## 6. Conclusion

In summary, Central Kurdish is an optional classifier language with a count-mass distinction wherein bare nouns are transnumeral and used in counting constructions, while plural morphology and the noun modifier *herdû* ‘both’ serve to distinguish count nouns from mass nouns. Although the analysis of Weiese & Mailing (2005) assumes that there is no count-mass distinction in Central Kurdish, recent data regarding role of plural morphology and of *herdû* ‘both’ contradicts this view. Analyses like Sutton & Filip (2016), which do not exclusively rely on the singular-transnumeral distinction, can effectively capture the grammar of Central Kurdish with the necessary modifications. These modifications should consider the unique characteristics of Central Kurdish, notably the integration of plural morphology with definiteness, and its exclusion in counted nouns. Further work is needed to clarify the distribution of *herdû* ‘both’ with respect to number marking on nouns, and to understand related phenomena like when classifiers are optional and whether or not bare nouns in Central Kurdish refer to kinds.

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