Partitive Case in Finnish Numeral-Noun Constructions

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Abstract

This paper is about the case pattern of nouns in singular numeral-noun constructions in Finnish. It is proposed that the case of the noun – partitive or non-partitive – is determined by the semantic properties of the numeral-noun construction. In particular, by analyzing numeral-noun constructions as distributive constructions that incorporate an unboundedness requirement formalized as stratified reference (Champollion 2010, 2015, 2017), I show that it is possible to account for the case contrast without assuming any crucial syntactic or semantic differences between the numerals or nouns themselves.

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1 Introduction

One of the most striking things about singular numeral-noun constructions (NNCs) in Finnish is the case contrast that distinguishes nouns in NNCs with the numeral *yksi* 'one' from nouns in NNCs with the numeral *kaksi* 'two' (or any other higher numeral).[1] With *yksi*, the noun bears the same case as the numeral (1a). With *kaksi*, the noun must bear partitive (PAR) case (1b).

(1) a. **yksi** { **kissa** / *kissa-a }
one.SG.**NOM** cat.SG.**NOM** cat.SG-PAR
'one cat'

b. **kaksi** { *kissa / **kissa-a** }
two.SG.**NOM** cat.SG.NOM cat.SG-**PAR**
'two cats'

In this contribution, I propose a semantic account of the NNC noun case contrast shown in (1). Under this proposal, the case of the NNC noun is determined by unboundedness, a higher-order semantic property that has been previously linked to the accusative-partitive case alternation that Finnish NPs show in object position (Leino 1991, Heinämäki 1984, 1994, Kiparsky 1998). The idea that unboundedness is behind the contrast shown in (1) has been suggested before (Csirmaz 2012). However, in this paper, I analyze NNCs as distributive constructions, and unboundedness as stratified reference (Champollion 2010, 2015, 2017) instead of divisibility (Csirmaz 2012). This allows for the semantic properties of the NNC as a whole to determine the case of the NNC noun. Moreover, under the present proposal, no syntactic or semantic differences have to be assumed between the NNC numerals *yksi* and *kaksi* on the one hand, or PAR- and non-PAR-marked NNC nouns on the other (cf. Vainikka 1993, Brattico 2011, Danon 2012, Csirmaz 2012, Sutton and Little 2020).

This paper is structured as follows. Section 2 discusses previous work on the case of NNC nouns. In section 3, I present distributive constructions and the higher-order property of unboundedness as formalized in the work of Champollion (2010, 2015, 2017). In section 4, I present the syntactic structure of NNCs that I adopt from Norris (2018), and then show how analyzing NNCs as distributive constructions accounts for the case contrast in (1). Section 5 presents some open issues, and section 6 concludes.

2 Previous work

2.1 Syntactic analyses

In previous work on Finnish NNCs, it is commonly assumed that the cardinal numeral *yksi* 'one' is somehow exceptional. For example, Vainikka (1993) proposes that in NNCs, the noun bears PAR because it is the complement of a numeral, and PAR is the default case of complements. *Yksi* is an exception: under this analysis, either its complements do not take default PAR, or the relevant nouns are not its complements to begin with. While Vainikka's default case account unifies the case pattern of NNCs with the case pattern of other structures in Finnish (e.g. complements of prepositions and verbs), it does not provide an explanation for the exceptionality of *yksi*.

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[1] Throughout this paper, *kaksi* 'two' represents all numerals higher than *yksi* 'one'.

Danon (2012) suggests a structural explanation. More specifically, for Danon, the case of an NNC noun with a given numeral in a given language depends on the structural position of that numeral in that language: while a numeral sitting in the position of a syntactic head is able to assign case to its complement, a numeral sitting in a specifier is not. For Finnish, this means that NNCs with *yksi* and *kaksi* have distinct syntactic structures: *yksi* must be a specifier, while *kaksi* must be a head. In other words, this analysis relies on *yksi* being structurally exceptional.

Brattico (2011) links the case contrast in (1) to a different type of syntactic difference between *yksi* and *kaksi*. In particular, Brattico argues that the Finnish lexicon contains two versions of all cardinal numerals except for *yksi*. The first version is quantificational (Q-numeral). This numeral has features that allow it to assign PAR to its necessarily singular complement, and it is not required to match the noun in case (2a). The second version is adjectival (A-numeral). This numeral declines like adjectives, which means that the numeral and noun must match in case, and lacks the features needed for assigning PAR (2b).[2]

(2) a. Minä näin [kaksi musta-a kissa-a] Q-numeral *kaksi*
I.NOM saw two.SG.NOM black.SG-PAR cat.SG-PAR
'I saw two black cats'

b. Minä näin [kahde-t musta-t kissa-t] A-numeral *kaksi*
I.NOM saw two-PL.ACC black-PL.ACC cat-PL.ACC
'I saw two groups/aggregates of black cats'

For Brattico, the two main differences between the Q/A ambiguous *kaksi* on the one hand and *yksi* on the other are that (i) *yksi* never assigns PAR to its complement, and (ii) *yksi* itself never appears in an unmarked or 'bare' form in contexts like (2a): it always declines like an adjective (3). Thus, for Brattico, there is no Q-*yksi* in Finnish, and this explains the case contrast in (1).[3]

(3) a. Minä näin [yhde-n musta-n kissa-n] A-numeral *yksi*
I.NOM saw one.SG-ACC black.SG-ACC cat.SG-ACC
'I saw one black cat'

b. Minä näin [yhde-t musta-t kissa-t] A-numeral *yksi*
I.NOM saw one-PL.ACC black-PL.ACC cat-PL.ACC
'I saw one group of black cats'

[2]When the whole NNC is assigned lexical case by e.g. a verb, Q- and A-numerals behave in the same way: they take on whatever case is assigned to the whole NNC, and match with the noun. This is illustrated in (i) with the verb *tykätä* 'to like', which requires elative (ELA) on its complement.

(i) a. Minä tykkään [yhde-stä/kahde-sta koira-sta]
I.NOM like one.SG-ELA/two.SG-ELA dog.SG-ELA
'I like one car/two dogs'

b. Minä tykkään [yks-i-stä/kahd-i-sta koir-i-sta]
I.NOM like one-PL-ELA/two-PL-ELA dog-PL-ELA
'I like one/two groups/types of dogs'

For the interpretation of plural NNCs, see the discussion on Estonian in Norris 2018.

[3]Note that as A-*yksi* may appear in singular NNCs (3a), some type of constraint needs to be evoked for Brattico's account to correctly rule out A-*kaksi* in singular NNCs (ii), as pointed out by Norris (2018).

(ii) *Minä näin [kahde-n musta-n kissa-n] A-numeral *kaksi*
I saw two.SG-ACC black.SG-ACC cat.SG-ACC
Int. 'I saw two black cats'

It is clear that a complete analysis of NNCs will have to account for the connection between the case of the NNC numeral and the case of the NNC noun. In this contribution, I will not attempt to do so. However, it should be noted that alternative explanations of the data in (2)-(3) are possible. For example, NNCs where no internal PAR assignment has taken place could be permeable to external case assignment, whereas NNCs with internal PAR assignment could be opaque for the same purpose. The point is that it is possible – and perhaps preferrable – to give an explanation that does not assume pervasive ambiguity for all other numerals besides *yksi* (see also Norris 2018).

2.2 Semantic analyses

There is a considerable amount of literature on the syntax and semantics of PAR in Finnish (Vainikka 1993, Vainikka and Maling 1996, Leino 1991, Heinämäki 1984, 1994, Kiparsky 1998, 2001, Anttila and Fong 2000, Megerdoomian 2000, Kratzer 2004, Huumo 2010, 2013, Csirmaz 2012, Acton 2014: a.o.). Most of this work focuses on the alternation between ACC and PAR in object position (4).

(4) a. Eino söi banaani-n
Eino.NOM ate banana.SG-ACC
'Eino ate a banana '

b. Eino söi banaani-a
Eino.NOM ate banana.SG-PAR
'Eino ate at/was eating a banana'

There is widespread agreement that the pattern in (4) has a semantic source. While ACC objects appear in sentences that describe events that have culminated – in the disappearance of a banana, for example – PAR objects signal that no such culmination has taken place. In the analysis of Kiparsky (1998), this semantic source is identified as unboundedness, and analyzed as the conjunction of the three higher-order properties given in (5).

(5) A predicate P is unbounded iff (Kiparsky 1998)

a. P is *divisive*: $\forall x[P(x) \wedge \neg atom(x) \rightarrow \exists y[y < x \wedge P(y)]]$

b. P is *cumulative*: $\forall x[P(x) \wedge \neg sup(x,P) \rightarrow \exists y[x < y \wedge P(y)]]$

c. P is *non-diverse*: $\neg\forall x,y[P(x) \wedge P(y) \wedge x \neq y \rightarrow \neg(x < y) \wedge \neg(y < x)]$

Kiparsky suggests that PAR appears on object NPs whenever either the verb or the noun is unbounded. As singular count nouns are bounded according to this account, the pattern in (4) is due to the interpretation of the verb: when the event is described as unbounded, i.e. as satisfying the conditions in (5), the form of the object NP reflects this through PAR-marking (4b). Otherwise, the object gets ACC (4a). Thus, under this analysis, one should not look for a single syntactic head that is responsible for the "assignment" of PAR. Instead, PAR appears as a reflection of unboundedness.

Csirmaz (2012) proposes a detailed analysis of PAR that closely follows this idea. In particular, Csirmaz argues that a syntactic case feature on a DP is licensed to be realized as PAR when it is contained in a *divisible*[4] constituent corresponding to a syntactic phase, i.e. in this case, a divisible DP or a divisible *v*P. The semantic component calculates the divisibility values of these phase constituents before morphological case is determined. For the object case pattern in (4), the analysis works as follows. First, the DP is built. This DP is not divisible, so PAR is not licensed at this phase boundary. The next time divisibility is checked is at the level of *v*P. If the event does not culminate, divisibility is met at the level of *v*P, and PAR is licensed on the DP (4b). If it does, divisibility is not met, and the DP will receive another case (4a).

In contrast to Kiparsky, Csirmaz explicitly discusses the case pattern of NNCs. For Csirmaz, the whole NNC is a DP that contains a NumP and an embedded NP. When the analysis outlined above is applied to NNCs, however, an unfortunate problem arises: NNCs are never divisible. Indeed, as

[4]For Csirmaz (2012:3), a predicate P is divisible if and only if all proper parts of an x in P are also in P.

much as no *x* in *one cat* has proper parts that are also in *one cat*, no *x* in *two cats* has proper parts that are also in *two cats*. Given that most NNC nouns nevertheless bear PAR – even when the higher phase *v*P is not divisible – something else must be happening. Thus, Csirmaz claims that on NNC nouns, PAR is licensed due to the inherent divisibility of unindividuated bare nouns (Borer 2005). NNC numerals, on the other hand, bear the case they are expected to.

Thus, NNCs require an exception to Csirmaz's divisibility-and-phases-based analysis of PAR. Moreover, Csirmaz does not discuss NNCs with *yksi*. Unless *yksi*-NNCs are in some crucial way different from *kaksi*-NNCs, we are led to the conclusion that in *kaksi*-NNCs, the bare noun is divisible (as it bears PAR), while in *yksi*-NNCs, it is not (as it does not bear PAR). Thus, it appears that Csirmaz's account requires either different analyses of *yksi*-NNCs and *kaksi*-NNCs, or a different semantics for PAR-marked and non-PAR-marked nouns.

The same remarks apply to Sutton and Little's (2020) recent analysis of NNCs. For Sutton and Little, PAR has a very important semantic role in Finnish NNCs: it functions as a type-shifter, and its presence is required for the composition of the NNC to work. Like Csirmaz (2012), Sutton and Little do not discuss NNCs with *yksi*, so it is unclear how *yksi* and non-PAR-marked nouns will compose. Perhaps *yksi* and *kaksi* have different semantics, which in turn accommodates the different semantic properties of non-PAR-marked and PAR-marked nouns, or perhaps *yksi*-NNCs and *kaksi*-NNCs are entirely different structures. In any case, a unified analysis is again not evident.

The proposal put forth in this paper follows the lead of Csirmaz in assuming that unboundedness determines noun case in NNCs, just like it determines object case in VPs. However, by relying on the formalization of unboundedness as stratified reference Champollion (2010, 2015, 2017), the proposal allows for some NNCs to be unbounded while others are not. Moreover, it allows for a unified syntactic and semantic analysis of the numerals *yksi* and *kaksi* on the one hand, and of non-PAR-marked and PAR-marked nouns on the other. If all else turns out to be equal, this type of analysis is simpler, and hence preferrable.

3 Stratified reference and distributive constructions

In a series of work, Champollion (2010, 2015, 2017) proposes a unified semantic analysis of three oppositions in the domains of aspect, measurement, and distributivity. These oppositions are illustrated in (6)-(8) (Champollion 2017:2).

(6) Aspect

a.	John **ran** for five minutes	atelic
b.	*John **ran to the store** for five minutes	telic

(7) Distributivity

a.	The boys each **walked**	distributive
b.	*The boys each **met**	collective

(8) Measurement

a.	thirty pounds of **books**	plural
b.	thirty liters of **water**	mass
c.	*thirty pounds of **book**	singular

The first example in (6) illustrates the well-known *for*-adverbial test which distinguishes between telic and atelic verbal predicates: while *for*-adverbials may felicitously modify atelic predicates, they are incompatible with telic predicates. The second example in (7) shows that *each* is compatible with distributive predicates such as *walk*, but incompatible with collective predicates such as *meet*. Finally, the third example in (8) shows that plural count nouns and mass nouns pattern differently from singular count nouns when it comes to measurement: while plural and mass nouns

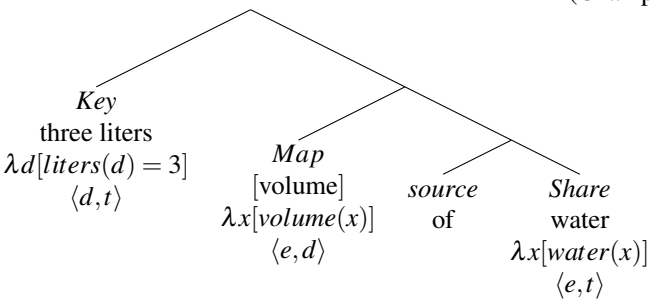
are acceptable in pseudopartitive measurement constructions, singular count nouns are not. Champollion's insight is that all three of these oppositions have to do with unboundedness. In particular, Champollion argues that (6)-(8) can be analyzed as *distributive constructions* (DCs), and that as DCs, these structures are acceptable if and only if they satisfy unboundedness.

Every DC contains the following four components. First and foremost, a specific node functions as the source of the unboundedness requirement. I will call this node the *source node* here. In (8), the source node is *of*; in (7), it is is *each*; and in (6), it is *for*. The other three components are *Share* (S, of type $\langle\alpha,t\rangle$), *Key* (K, of type $\langle\beta,t\rangle$), and *Map* (M, of type $\langle\alpha,\beta\rangle$). The source node composes the DC and introduces an unboundedness presupposition that requires the distributivity of the Share (something that is divided) over the Key (a reference value) along the Map-given dimension and down to a granularity that is specific to the DC. The informal definition of *stratified reference* (SR), the higher-order property corresponding to unboundedness, is given in (9).

(9) Stratified reference (SR) (Champollion 2017:4):
Stratified reference is a higher-order property requiring that a predicate [Share] that holds of a certain entity x or event e must also hold of its parts along a dimension [given by the Map] and down to a certain granularity [the parts of x/e must either have a smaller Map-given value than x/e, or the parts must be atomic].

SR accounts for all three contrasts shown in (6)-(8). For reasons of space, I will illustrate how the analysis works with just the pseudopartitive measurement construction *three liters of water* here (see section 5 and Champollion 2017 for more). As mentioned above, the source node of a pseudopartitive DC is *of*. The rest of the DC roles are attributed as follows. The Share is what is being measured: in our case, the nominal predicate $\lambda x[water(x)]$ (of type $\langle e,t\rangle$). The Key, in turn, is a predicate over degrees that measure 3 liters (of type $\langle d,t\rangle$). And finally, the Map is a function that measures volume (type $\langle e,d\rangle$). The structure of the DC is given in (10), and the denotation of the source node *of* in (11).[5]

(10) (Champollion 2017:97)



(11) $[\![of]\!] = \lambda S_{\langle e,t\rangle}\lambda M_{\langle e,d\rangle}\lambda K_{\langle d,t\rangle}\lambda x_e : x \in *\lambda x'[S(x') \wedge M(x') < M(x)] \,.\, S(x) \wedge K(M(x))$

The assertive component is shown after the period in (11). The composition of (10) proceeds as shown in (12). At the end of the derivation, the assertive component produces a predicate of entities that is true of entities that are water and whose volume measured in liters is 3.

(12) a. $[\![\text{of}]\!]([\![\text{water}]\!])$
$= \lambda S_{\langle e,t\rangle}\lambda M_{\langle e,d\rangle}\lambda K_{\langle d,t\rangle}\lambda x_e \,.\, S(x) \wedge K(M(x))\ (\lambda x[water(x)])$
$= \lambda M_{\langle e,d\rangle}\lambda K_{\langle d,t\rangle}\lambda x_e \,.\, water(x) \wedge K(M(x))$

b. $[\![\text{of water}]\!]([\![\text{[volume]}]\!])$
$= \lambda M_{\langle e,d\rangle}\lambda K_{\langle d,t\rangle}\lambda x_e \,.\, water(x) \wedge K(M(x))\ (\lambda x[volume(x)])$

[5] In pseudopartitive structures, the granularity parameter is set to $\lambda d[d < M(x)]$, which produces the part of the SR requirement where $M(x')$ is required to be smaller than $M(x)$. See Champollion (2017) for more details.

$= \lambda K_{\langle d,t\rangle} \lambda x_e \,.\, water(x) \wedge K(volume(x))$

c. $[\![$of water [volume]$]\!]([\![$three liters$]\!])$
$= \lambda K_{\langle d,t\rangle} \lambda x_e \,.\, S(x) \wedge K(M(x))\ (\lambda d[liters(d) = 3])$
$= \lambda x_e \,.\, water(x) \wedge liters(volume(x)) = 3$

The SR requirement is encoded as a presupposition between the colon and the period in (11). After the steps in (12), the requirement looks like (13). In our example, this presupposition is met: any x that is water and has a volume of 3 liters can be divided into one or more parts x' that are also water and whose volume is smaller than the volume of x.

(13) $x \in *\lambda x'[water(x') \wedge volume(x') < volume(x)]$

Recall the data in (8): in pseudopartitives, mass and plural nouns are acceptable, but singular count nouns are not. Under Champollion's analysis, this follows if mass and plural nouns are alike in that they have divisive reference, allowing for SR to be satisfied, while singular count nouns have quantized reference. In that case, no x in *book* can be divided into one or more x' that are also in *book* but have a smaller weight than x. Thus, with singular count nouns, the SR requirement of the DC cannot be satisfied, and that is why pseudopartitive DCs do not accept singular count nouns.

In the next section, I will show how NNCs can be analyzed as DCs, and how the (dis)satisfaction of SR within the DC can be linked to the appearance of PAR on the noun.

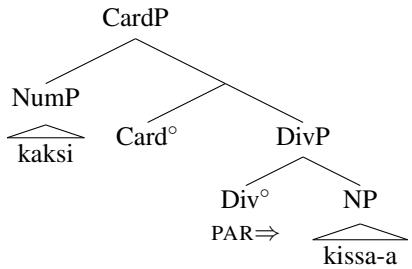
4 Analysis

4.1 Syntax

Before discussing the semantics of Finnish NNCs, I will briefly present the syntactic analysis that I adopt for Finnish NNCs, namely, that of Norris (2018). This analysis blends together seamlessly with the semantic proposal put forth in section 4.2.

Norris's syntactic analysis of NNCs was first designed for Estonian. In (14), I apply it to the Finnish example *kaksi kissa-a* 'two cats'.

(14)



Under Norris's analysis, the numeral always sits in Spec,CardP (cf. Danon 2012). The fact that it does not sit in a head position is not problematic for case assignment, because case assignment is performed by the functional head Div° (Borer 2005). This head is assumed to be in complementary distribution with $[PL]$, the plural morpheme, which allows Norris to explain why PAR-marking is restricted to singular NNCs in Estonian. Although lack of space prohibits further discussion of plural NNCs, note that this analysis also extends to Finnish (cf. Brattico 2011).

Like many others, Norris does not discuss why *yks* (the Estonian cousin of *yksi*) is banned from appearing with a PAR-marked noun. However, given that Norris's analysis correlates the morphological singularity of a given NNC with the absence of a plural head, and hence, the presence of the complementary PAR-assigning Div°, singular number should be associated with PAR-assignment regardless of the numeral. In what follows, I will show how assuming that NNCs are DCs resolves this issue, and explains when PAR appears in singular NNCs. While this paper is solely focused on

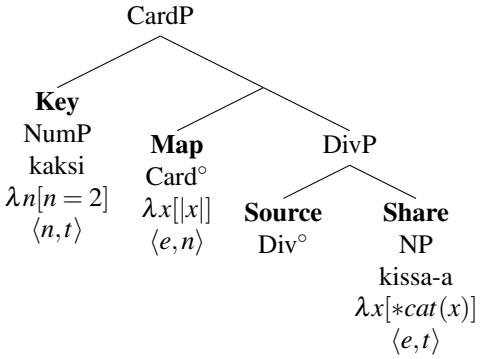
Finnish data, it should be noted that the proposal given below applies in a straightforward way to singular NNCs in Estonian as well (see Norris 2018 for data and discussion).

4.2 Semantics

With the syntax of NNCs defined as in section 4.1, the first question for an analysis of NNCs as DCs is this: which syntactic projections correspond to which components of the DC?

Let us begin with the Share. In DCs, the Share represents the thing that is divided. In the NNC *kaksi kissa-a* 'two cats', the most natural candidate for this role is the NP, which houses the nominal predicate $\lambda x[*cat(x)]$ of type $\langle e,t\rangle$.[6] The Key, then, is NumP, which I assume houses the predicate of numbers $\lambda n[n=2]$ of type $\langle n,t\rangle$.[7] Finally, the Map is Card°, which I assume to house the cardinality function $\lambda x[|x|]$ of type $\langle e,n\rangle$. This leaves us with the functional head Div° as the source node, which will align well with Norris's idea that Div° is responsible for PAR-assignment inside NNCs. The resulting DC structure of the NNC *kaksi kissa-a* is shown in (15).

(15)



As in other DCs, the source node is responsible for the composition of the NNC. Setting the granularity parameter to $\lambda n[n < M(x)]$ (cf. fn. 3), I give the following denotation for Div° (cf. (11)).

(16) $[\![\text{Div}^\circ]\!] = \lambda S_{\langle e,t\rangle}\lambda M_{\langle e,n\rangle}\lambda K_{\langle n,t\rangle}\lambda x : x \in *\lambda x'[S(x') \wedge M(x') < M(x)] \,.\, S(x) \wedge K(M(x))$

With the DC structure in (15) and the denotation in (16), the assertive meaning of *kaksi kissa-a* 'two cats' comes out as a predicate of entities of type $\langle e,t\rangle$ such that the described x is in $*cat$ and the cardinality of that x is 2. The SR presupposition requires that the described x be divisible into one or more parts x' that are also in $*cat$ but whose cardinality is smaller than that of x. With *kaksi* in NumP, this requirement is satisfied: the described plural individual x in $*cat$ whose cardinality is 2 can be divided into two atomic cats whose cardinality is 1. This is shown in (17).

(17) $\lambda x : \boxed{x \in *\lambda x'[*cat(x') \wedge |x'| < |x|]}\checkmark \,.\; *cat(x) \wedge |x| = 2$

Changing the numeral from *kaksi* to *yksi* amounts to changing the Key of the DC. Crucially, in the resulting NNC *yksi kissa* 'one cat', the SR requirement is no longer met: according to the assertive component, the cardinality of the described x is 1, and so x cannot be divided into one or more parts x' that are in $*cat$ and whose cardinality is smaller than 1. This is shown in (18).

[6] Note that the denotation of singular *kissa* 'cat' is closed under mereological sum ($*$), which means that it contains both atomic and plural individuals. I will come back to this point in section 5.

[7] Guided by the type-theoretic schema of DCs, I assume a very simple semantics for numerals. It is possible that NumP itself has a complex internal structure, however. Moreover, note that while the numeral itself does not have an intersective semantics on this account, as a whole, the DC is restrictive with respect to the Share (cf. Link 1983, Ionin and Matushansky 2006, Bale et al. 2011).

(18) $\lambda x: \boxed{x \in *\lambda x'[*cat(x') \wedge |x'| < |x|]}$ ✗ . $*cat(x) \wedge |x| = 1$

In sum, under the proposed analysis, *kaksi*-NNCs are unbounded, while *yksi*-NNCs are not. Thus, we have an analysis where the unboundedness of the NNC correlates with the case of the NNC noun, and where the numerals and nouns involved receive a unified analysis. It should, however, be noted that as DCs, NNCs are slightly different from those shown in (6)-(8): in DCs, presupposition failure does not lead to unacceptability. Instead, the unacceptable examples are those in which the case assignment process has been forced not to abide by the result of the SR test. For the technical implementation of this case assignment process, I follow Norris (2018) in assuming that the functional head Div$^\circ$ is responsible for PAR-assignment, and Csirmaz (2012) in assuming that the insertion of morphological case marking may indeed be dictated by the semantic module.

5 Open issues

In section 4.2, I assume that the denotation of the bare count noun *kissa* 'cat' is closed under mereological sum (see also Csirmaz 2012). In other words, its denotation contains both atoms and plural individuals. This assumption has been previously made for bare nouns in Turkish and Armenian (Bale et al. 2011). However, at first sight, it does not seem to actually work in Finnish, as bare nouns are now incorrectly predicted to be acceptable in pseudopartitive measurement constructions (19) (Sutton and Little 2020) and in predications with plural subjects (20b):

(19) *kaksi kilo-a kirja-a
two.SG.NOM kilo.SG-PAR book.SG-PAR
Int. 'two kilos of books'; acceptable with coercion 'two kilos of book material'

(20) a. Laura on insinööri
Laura.NOM is engineer.SG.NOM
'Laura is an engineer'

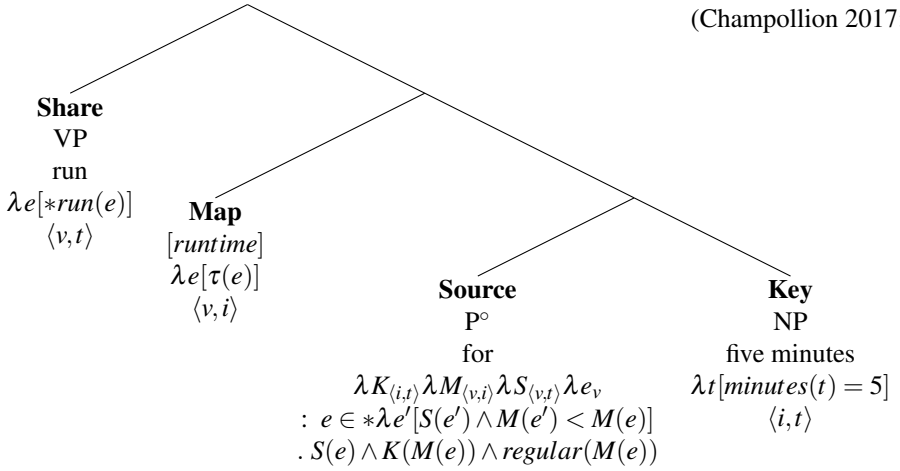
b. *Laura ja Seppo on/ovat insinööri
Laura.NOM and Seppo.NOM is/are engineer.SG.NOM
Int. 'Laura and Seppo are engineers'

The data in (19) and (20) merits a thoughtful discussion for which I do not have the space here. Under one possible solution, the nouns in these examples are in fact not really bare. If, for example, they are accompanied by a covert equivalent of *yksi* (cf. Csirmaz 2012 who assumes that all count nouns must be individuated, and that NNCs involve individuation), they are predicted to be unable to appear in these contexts due to semantic incompatibility. First, as *yksi*-NNCs are quantized, and quantized constituents cannot be the thing that is measured in pseudopartitive measurement constructions (see section 3 and (8)), *kirja-a* is not be predicted to be acceptable in (19) if it is accompanied by a covert *yh-tä* 'one-PAR'. Similarly, in (20b), Laura and Seppo are not able to form a single engineer. Thus, we may be able to explain the data in (19) and (20b) while retaining the assumption that bare nouns are closed under sum in Finnish.

The second open issue concerns the overall objective of unifying the analyses of PAR in NNCs and PAR on object NPs. In particular, one must ask: what would an SR-based analysis of object case look like? Here, I provide a quick sketch of one possible analysis. A proper SR-based analysis of object case in Finnish will have to await another time and place.

As mentioned in section 2, the standard assumption in the literature is that object case is related to aspect. Thus, perhaps the most tempting way to begin analyzing PAR objects in Finnish is to look at *for*-adverbials. For Champollion (2010, 2015, 2017), *for*-adverbials appear in DCs built around the source node *for* where the Share is a predicate of events, the Key is a predicate of intervals, and the Map is a runtime function (τ). This is illustrated with *run for five minutes* in (21) and (22).

(21) (Champollion 2017:98)



(22) The semantics of *run for five minutes*:
$\lambda e_v : e \in *\lambda e'[*run(e') \wedge \tau(e') < \tau(e)]. *run(e) \wedge minutes(\tau(e)) = 5 \wedge regular(\tau(e))$

In words, (21) produces a predicate of events e such that e is a running event with a regular (i.e. sufficiently continuous) runtime of 5 minutes. In this structure, SR is satisfied: e is divisible into one or more running events e' whose runtime is shorter than 5 minutes.

Applied to object case in Finnish, this analysis leads to a few of immediate questions. First, in (21), the Share is the whole VP, which means that it includes the object. Thus, if we want to have the source node assign PAR to its complement, as was suggested for NNCs above, the Share and the Key would have to swap places, so that the object could receive case from the source node. Second, object case assignment in Finnish is clearly not dependent on the presence of an overt Key: both examples in (4), for example, appear without an overt adverbial. This means that covert Keys would have to be allowed. And third, there is a class of verbs called quasiresultatives (Itkonen 1976) with which the object NP is non-PAR, but a *for*-adverbial is licit. In (23), the compatibility of ACC objects with *for*-adverbials is illustrated with *muistaa* 'to remember'.[8]

(23) Minä muistin koodi-n tunni-n
I.NOM remembered code.SG-ACC hour.SG-ACC
'I remembered the code for an hour'

If we assume that the acceptability of object PAR and the acceptability of *for*-adverbials is determined within the same DC, the pattern in (23) is highly unexpected. However, in previous work, it has been suggested that quasiresultative verbs have a complex internal event semantics (Kiparsky 2001, Csirmaz 2012). It is therefore possible that a more detailed analysis of the structure of quasiresultative sentences could remove the challenge that (23) poses for the aspectual-SR-based analysis of Finnish object case. The two other challenges mentioned above are slightly less worrysome.

6 Conclusion

In this paper, I put forth an analysis of noun case in Finnish NNCs that owes a lot to previous work by Kiparsky (1998), Csirmaz (2012), and Norris (2018). By analyzing NNCs as distributive constructions that incorporate an unboundedness requirement formalized as stratified reference (Champollion 2010, 2015, 2017), I showed that it is possible to account for the case contrast between nouns in NNCs with *yksi* 'one' and nouns in NNCs with *kaksi* 'two' without assuming any crucial syntactic or semantic differences between the numerals or nouns themselves. While the empirical focus of this paper was solely on Finnish, the proposal extends to Estonian in a straightforward way.

[8]Other quasiresultative verbs with the same case pattern are e.g. *omistaa* 'to own', *nähdä* 'to see', and other cognition and perception verbs.

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