Solid Containers Filled with a Fluid Substance?
An Aspectual Metaphor Approach to Finnish
Number Quantifiers and Object Case Marking

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Abstract: Janda (2004) demonstrates that an illustrative way of analyzing Slavic aspect is the metaphor where perfective situations are paralleled with solid objects and imperfective ones with fluid substances. In this paper Janda's approach is used to analyze the interplay between lexical quantification by Finnish number quantifiers (e.g., *moni* 'many' and *usea* 'several; a number of') and the aspectual case marking of the object that alternates between the partitive, which designates unbounded quantity and/or nonculminating aspect, and the accusative (sg.) or nominative (pl.), both of which designate a combination of bounded quantity and culminating aspect. The focus is on plural partitive objects quantified by number quantifiers. In general, an unquantified partitive object expresses unboundedness, which is a fluid-substance type of conceptualization. However, when a (plural) partitive object is quantified by a number quantifier, the resulting complex nominal renders the quantity bounded at the collective level, irrespective of whether the individual referents or the subevents in which they participate are of a bounded (culminating) or an unbounded (nonculminating) kind, in terms of quantity or aspect. In such expressions, the "fluid substance" conceptualization may prevail at the level of the individual object referents and of the subevents where they participate. In metaphorical terms, this means that there may be some fluid substance inside the set of solid objects designated by the quantifier.

1. Introduction

In Finnish, number quantifiers such as *moni* 'many', *usea* 'several; a number of', and *harva* 'few' agree with the quantified nominal in case and number. When a number quantifier quantifies the grammatical object, it generally renders the clausal aspect bounded at the collective level. This means that the event ends when each referent of the set evoked by the quantifier has participated in it. The component events, each of which involves one object referent only, may still be of a nonculminating kind. In such a case they are conceptualized as delimitative ('to do something for a while'; Janda 2004). Consider example (1).

(1) Käytä-n   usea-a   solmio-ta   viiko-ssa.
     wear-PRES.1SG   a.number.of-SG.PAR   tie-SG.PAR week-INE[1]

     'I wear a number of ties (in) a week.'

In (1), the verb ('wear [a tie]') is atelic and has no culmination point. In such a case, the Finnish aspectual object marking system triggers the partitive case. The aspectual function of the partitive object is to mark the lack of culmination in each component event. In spite of this, the quantifier renders the aspect bounded at the collective level, because the component events that constitute it are conceptualized as delimitative and sequential in time. In other words, each tie is worn for a limited period of time only, one after another. When the quantity of the ties, and of the delimitative wearing events, has gradually increased and reached the quantity specified by the quantifier, the overall event ends. The quantifier thus allows the overall event to be conceptualized as aspectually bounded. Its boundedness is corroborated by the acceptability of the time-frame adverbial ('in a week') in example (1). As is well known, such adverbials generally combine with bounded predications but reject unbounded ones (consider *I ate the grapes in an hour* vs. **I ate grapes in an hour*).

Example (1) also demonstrates that the decisive factor in the Finnish aspectual object marking is not whether the event continues in time or ceases, but whether it culminates or not. In (1), the partitive object reflects the lack of culmination in the component events, which nevertheless are of a delimitative kind. In Finnish, a singular delimitative though nonculminating event expressed with a partitive object does not allow a time-frame adverbial. The time-frame adverbial is felicitous in (1) because the quantifier *usea* 'several' sets up a vague boundary (see also Langacker 2016: 150), which is approached and ultimately reached by the increasing quantity of the ties. To use Janda's (2004) analogy, the unbounded component events are like fluid substances that fill a set of solid containers provided by the lexical quantifier. When all containers have been filled, the event reaches its endpoint.

In this paper I use Janda's (2004) metaphor-based approach to aspect, complemented by some recent insights from Cognitive Grammar (Langacker 2008, 2016), in an analysis of the quantificational and aspectual interplay between Finnish number quantifiers and object case marking. In section 2, I introduce the Finnish number quantifiers in more detail, and the aspectual object marking system is briefly introduced in section 3. Section 4 analyzes the interplay of number quantifiers and the aspectual object case marking. Section 5 summarizes the results of the study.

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[1] The following glosses are used: ACC = accusative; ADE = adessive ('at'; 'on top of'); INE = inessive ('in'); NEG = negation; NOM = nominative; PAR = partitive; PRES = present tense; PST = past tense; PTCP = participle.

2. The Finnish System of Number Quantifiers

The class of nominal quantifiers in Finnish comprises elements traditionally classified as indefinite pronouns and quantifying adverbs (e.g., Tuomikoski 1969; Hakulinen and Karlsson 1979; Hakulinen et al. 2004: §657, §740–62). Number quantifiers (for the term, see Radden and Dirven 2007: 120) such as *moni* 'many', *harva* 'few', and *usea* 'several; a number of' typically quantify count nouns both in the singular and in the plural, and they agree with the quantified noun in number and case. According to Langacker (2016: 150), their nearest English equivalents, *several* and *many*, are classified as absolute quantifiers measuring a plural mass. Examples (2) and (3) illustrate the use of number quantifiers with intransitive and transitive subject arguments, respectively.

(2) Moni   kirja   on   rikki.
     many.SG.NOM   book.SG.NOM   be.PRES.3SG   broken

     'Many books are broken [lit. Many a book is broken].'

(3) Usea-t   silminnäkijä-t   näk-i-vät   onnettomuude-n.
     a.number.of-PL.NOM   eye-witness-PL.NOM   see-PST-3PL   accident-ACC

     'A number of eyewitnesses saw the accident.'

In (2), the subject nominal *moni kirja* is in the nominative singular, and the verb agrees with it in number and person. However, the nominative plural *mone-t kirja-t* [many-PL.NOM book-PL.NOM] would also be acceptable, without a noticeable difference in meaning. In (3) the quantifier *usea* 'several' quantifies a nominative plural subject and is likewise in the nominative plural (though again, a nominative singular would be likewise acceptable).

  Since Finnish number quantifiers alternate between the singular and the plural, it is reasonable to ask what the semantic difference between the two is—after all, both apparently refer to a multiplicity of referents. In the spirit of Cognitive Grammar and Langacker's (2008: 272–75, 292–96; 2016: Ch. 4) analysis of English quantifiers, I propose that the singular forms of these quantifiers pick a virtual (fictive) referent, which is a representative instance of the whole set (cf. Langacker's 2008: 293–95 and 2016: 146 treatment of the English "representative instance" quantifiers *each*, *any*, and *every*). By contrast, plural forms such as (3) designate a multiplicity directly (like the English *several* or *many*, which in most cases quantify plurals). Note, however, that even such a plurality may be virtual, not actual. This is the case with English proportional relative quantifiers such as *most* or *some*, according to Langacker (2008: 292).

Support for the analysis sketched above can be sought in the oppositions between the distributive and collective meanings that this number alternation sometimes reflects. Quantified nominals in the singular (as in (2)) allow distributive predications, such as 'Many students in our department know Italian', but reject predications that are decidedly collective, such as 'Many students in our department met in the café' (for the quantifier *moni* 'many' in particular; see also Huumo 2017). For such collective meanings, plural forms (as in (3)) need to be used. On the other hand, plural forms also allow distributive predications. A similar opposition appears to differentiate between the English singular *Many a student* (consider *Many a student knows Italian* vs. ?*Many a student met in the café*) and the plural *Many students* (*Many students know Italian*; *Many students met in the café*).

The ability of number quantifiers to agree with the quantified noun in number and case makes it possible to use number quantifiers even with oblique-case nominals, as in (4) and (5).

(4) Mone-lla   lapse-lla   ol-i   leija
     many-SG.ADE   child-SG.ADE   be-PST.3SG   kite.NOM

     'Many children [lit. Many a child] had a kite.'

(5) U-i-n   use-i-ssa   järv-i-ssä.
     swim-PST-1SG   several-PL-INE   lake-PL-INE

     'I swam in several lakes'.

In (4), the quantifier *moni* quantifies the possessor nominal in the possessive construction, where the possessor is marked with the adessive case. In (5), the quantifier *usea* quantifies a locative adverbial in the plural inessive ('in') case. In both examples, the quantifiers agree with the quantified nominal in number and case. Such behavior emphasizes the adjectival nature of these quantifiers (see also Langacker 2016): in Finnish, adjectival modifiers likewise agree with the head noun in number and case.

3. The Finnish Object Marking System: A Combination of Quantification and Aspect

In this section I introduce the Finnish object case-marking system, which is known for its alternation between the partitive, on the one hand, and the morphologically heterogeneous category sometimes referred to as the "total object," on the other (for accounts in English, see, e.g., Heinämäki 1984, 1993; Kiparsky 1998; Huumo 2005, 2010). A "total object" is morphologically realized by the accusative case in the singular (-*n*) or by the nominative in the plural, but also in the singular in

certain impersonal and imperative constructions. In semantic terms, the partitive object has three main functions: it designates an unbounded quantity of a mass-like referent, as in (6), unbounded (= nonculminating) aspect, as in (7), or negative polarity, as in (8).

(6) Löys-i-n   sien-i-ä.
     find-PST-1SG   mushroom-PL-PAR
     'I found [sm^2] mushrooms.'

(7) Katsel-i-n   televisio-ta.
     watch-PST-1SG   television-PAR
     'I watched tv.' / 'I was watching tv.'

(8) E-n   löytä-nyt   sien-tä.
     NEG-1SG   find-PTCP   mushroom-PAR
     'I did not find a/the mushroom.'

In (6), the plural partitive indicates an indefinite and quantitatively unbounded referent ('sm mushrooms'). The function of the partitive in (6) is purely quantificational, not aspectual: the verb 'find' designates an achievement, which is a punctual and instantly culminating event. Since the aspectual function of the partitive is to designate nonculminating aspect, it can be concluded that the partitive case in example (6) is not motivated by aspectual factors but by quantification only. In fact, the verb *löytää* 'find' does not allow a partitive object solely motivated by aspect. For instance, an object that designates a single solid object, such as one mushroom, cannot be in the sg. partitive (*sien-tä*) with the verb 'find'. Instead, the accusative *siene-n* must be used. Figure 1 on page 6 illustrates a reading of (6) where the unbounded quantity of mushrooms participates in the event instantaneously, i.e., all mushrooms are found at once.

In example (7), on the other hand, the verb designates an atelic event, which in principle can continue indefinitely in time. An atelic event does not culminate, and thus the partitive object in (7) is motivated by aspect. From the point of view of quantification, the object nominal in (7) designates a single solid object, which cannot constitute an unbounded quantity. This means that quantification is not a factor motivating the partitive: the partitive object in (7) is purely aspectual.

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[2] I follow Langacker (2016) in representing the English unstressed *some* as *sm*. According to Langacker (2016: 93), *sm* is an indefinite article for mass nouns, and hence an element of grounding. It is often a natural translation equivalent for a Finnish partitive object motivated by quantificational unboundedness.
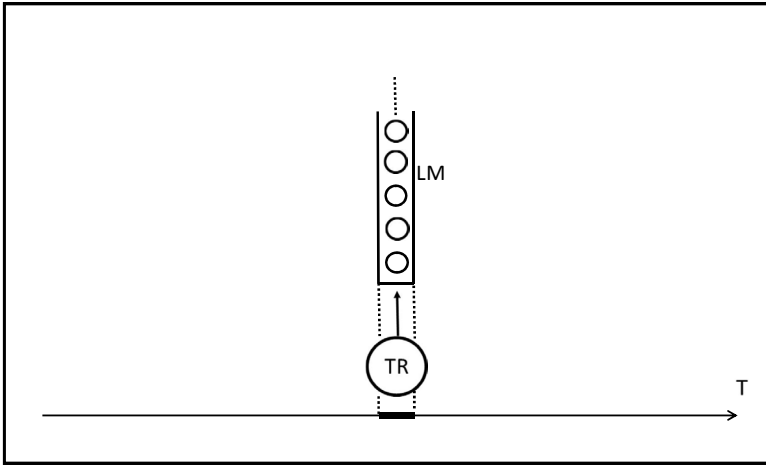
Figure 1. 'I found mushrooms.' TR = Trajector, LM = Landmark, T = Time. An unbounded quantity (LM) participates in a punctual event with a minimal duration in time.

As the two alternative English translations of example (7) suggest, the nonculminating aspect can manifest itself in different ways, which the partitive object does not specify. As indicated by the translations, the example allows a progressive reading 'I was watching tv' and a delimitative reading 'I watched tv (… and fell asleep)'. With both readings, the event lacks a culmination, even though the delimitative reading depicts the event as ending in time. With the progressive reading, the event is conceptualized as ongoing: it is scrutinized at an arbitrarily chosen intermediate point of time (for the English progressive, see Langacker 1991: 91–97). This again demonstrates how the decisive factor in case marking is not whether the event continues in time or not, but whether it culminates or not (see Janda 2004: 520 for some interlingual comparisons in this regard).

Example (8) demonstrates how negation turns all objects into the partitive, even those that designate a single solid entity in a clause with an achievement verb. Thus the partitive object in (8) is purely motivated by negation. In semantic terms, though, it can be argued that the aspectual factor of lacking a culmination also plays a role in triggering the partitive in (8): obviously, a nonoccurring event does not culminate.

In examples (6–8), the three functions of the partitive, i.e., unbounded quantity, nonculminating aspect, and negation, are kept neatly apart. In many cases, however, the three functions are intertwined, which results in massive ambiguities regarding aspect and quantity. Consider (9):

(9) Sö-i-n   sien-i-ä.
    eat-PST-1SG   mushroom-PL-PAR

> 'I ate [sm] mushrooms.' (The partitive is conceptualized as being motivated
>   by unbounded quantity only, as in ex. 6)
> 'I was eating the mushrooms.' (The partitive is conceptualized as being
>   motivated by progressive aspect only, as in ex. 7)
> 'I was eating mushrooms.' (The partitive is conceptualized as being
>   motivated by both unbounded quantity and progressive aspect.)

In (9), the partitive has many readings. First, as in (6), it can be conceptualized
to reflect a purely quantificational function: 'I ate [sm] mushrooms'. In this reading,
the activity of 'eating' has ended, but the quantity of the mushrooms eaten is con-
ceptualized as unbounded (see Figure 2). Because of this, the overall event is con-
ceptualized as lacking a culmination; it is delimitative in nature, even though the
component events of eating one mushroom at a time are of the culminating type.
Were the quantity in (9) conceptualized as bounded ('I ate (all) the mushrooms'), the
nominative object (*siene-t* [mushroom-PL.NOM]) would need to be used (see Figure 3
on page 8). In sum, eating an unbounded quantity of mushrooms is not concep-
tualized as a culminating event, while eating a bounded quantity, such as a serving
of mushrooms, is a culminating event and triggers the total object.

The partitive in example (9) also has a purely aspectual reading, comparable
to that in example (7), 'I was eating the mushrooms'. In this reading, the quantity
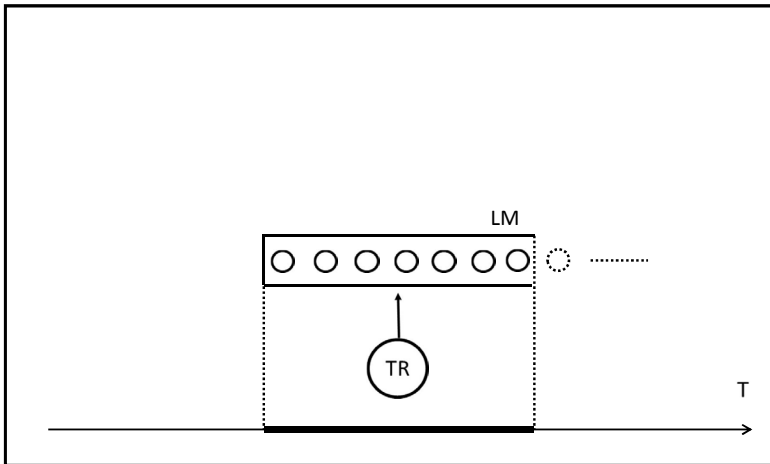of the mushrooms (to be eaten) is conceptualized as bounded, such as a serving of

Figure 2. 'I ate mushrooms.' TR = Trajector, LM = Landmark, T = Time.
An unbounded quantity (LM) participates in a durative-delimitative
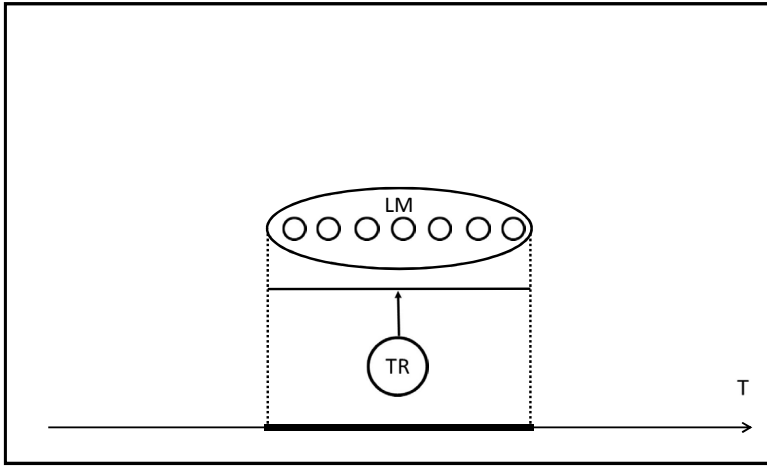event. The event terminates but does not culminate.

Figure 3. 'I ate the mushrooms.' TR = Trajector, LM = Landmark, T = Time.
A bounded quantity (LM) participates in a durative event that culminates
when the whole quantity of mushrooms has been eaten.

mushrooms (see Figure 4), and the partitive case reflects progressive aspect, which
is a nonculminating aspect type. More precisely, there is a culmination point to the
event (when the whole set of mushrooms will ultimately be eaten), but the point of
reaching it is not included in the scope of the predication.

Example (9) has yet another reading, which combines progressive aspect and
unbounded quantity: 'I was eating mushrooms'. In this reading the event is on-
going and the quantity of the mushrooms (to be eaten) is conceptualized as un-
bounded. In terms of Janda (2004), an ambiguous example like (9) thus allows the
partitive to designate a "fluid substance" literally (since plurals behave like masses
in this respect), or the metaphorical fluid substance of a nonculminating event, or
both simultaneously.

Standard linguistic tests for the boundedness vs. unboundedness of predi-
cations include the use of time-frame adverbials ('in an hour', Finnish *tunni-ssa*
[hour-INE]), which combine with otherwise bounded predications, and temporal
measure phrases ('for an hour', Finnish *tunni-n* [hour-ACC]), which combine with
otherwise unbounded predications. In a metaphor-based approach to aspect, these
can be thought of as metaphorical containers of different kinds. A measure phrase
designates a container completely and seamlessly filled by fluid substance, such
as a balloon filled with air or liquid. A time-frame adverbial, on the other hand, is
like a box or a basket into which a solid object can be put: the container does not
alter the contour of the object, and the object may fill it only partially (consider *The
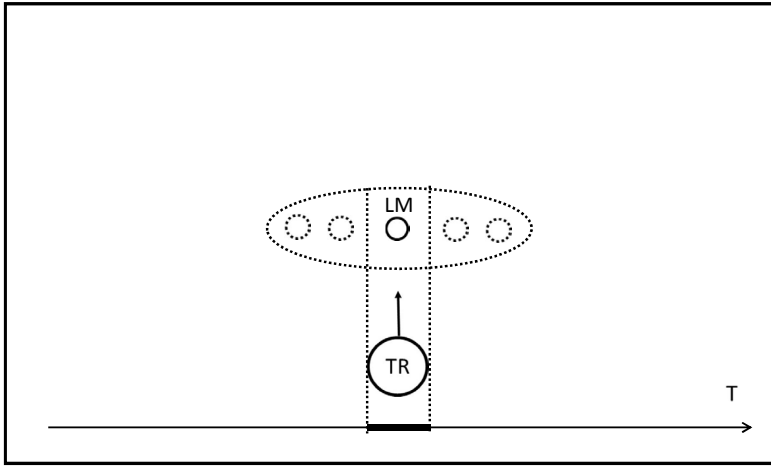patient died in an hour*).

Figure 4. 'I was eating the mushrooms.' TR = Trajector, LM = Landmark,
T = Time. A bounded quantity (LM) participates in a progressive event.
The progressive construction profiles an intermediate stage (a
"cross-section") of the overall event as a state. The culmination
of the event is not included in the scope of the predication.

If applied to (9), such test indicators reveal that the example represents the event, in metaphorical terms, as a fluid substance: only the measure phrase *tunnin* 'for an hour' is felicitous (*Sö-i-n sien-i-ä tunni-n* [eat-PST-1SG mushroom-PL-PAR hour-ACC] 'I ate mushrooms for an hour'). By contrast, *tunnissa* 'in an hour' is awkward (*?Söin sieniä tunnissa* '?I ate mushrooms in an hour'). More precisely, if we consider the relation of the measure phrase to the three readings of (9) distinguished above (quantity only/aspect only/quantity + aspect), it turns out that the measure phrase only allows two of the three: either the combination of unbounded (nonculminating) aspect and quantity ('I ate mushrooms for an hour') or the purely aspectual reading ('I was eating the mushrooms'). The latter, together with the measure phrase, designates an event that can be freely translated as 'I spent an hour eating the mushrooms'. With this reading the example means that the eating of a bounded quantity of mushrooms went on for an hour, but like the English translation, it is vague as to whether all mushrooms were eaten or not. For the 'all mushrooms eaten' reading, the total object (pl. nominative, example (10)) would be the unambiguous option. With the total object, the example would not allow a temporal measure phrase but only a time-frame adverbial, as in (10).

(10) Sö-i-n   siene-t   tunni-ssa.
      eat-PST-1SG   mushroom-PL.NOM   hour-INE

      'I ate (all) the mushrooms in an hour.'

Example (10) designates the overall event as a solid object which can then be put in
the metaphorical container designated by the time-frame adverbial. The fact that
even (9) can be understood as designating the event in its totality (in which case
it roughly means 'It took me an hour to eat all the mushrooms') is a manifesta-
tion of the operation referred to as *pulverization* by Janda (2004): the solid object
is crushed and made into a fluid substance, which then fills the "elastic" container
designated by the measure phrase. Note, last of all, that the purely quantificational,
aspectually delimitative reading of (9), 'I ate [sm] mushrooms', does not arise in the
presence of the temporal measure phrase, which only combines with aspectually
unbounded predications (of which delimitative events are a subtype in the gram-
mar of Finnish).

   Such aspectually motivated readings are also available to objects in the sin-
gular partitive, and concern object phrases headed by mass nouns, as in (11), and
count nouns, as in (12), alike. However, note that in the singular, the reading that
combines nonculminating aspect and unbounded quantity is only possible with
mass nouns, as in (11).

(11) Sö-i-n   puuro-a   tunni-n.
      eat-PST-1SG   porridge-PAR   hour-ACC

      'I ate porridge for an hour.'
      'I spent an hour eating the porridge [with or without finishing it].'

(12) Lu-i-n   kirja-a   päivä-n.
      read-PST-1SG   book-PAR   day-ACC

      'I spent a day reading the book [with or without finishing it].'

In other words, (11) can mean 'I ate porridge for one hour' (nonculminating aspect
+ unbounded quantity of porridge) or that I spent one hour eating *the* porridge
(nonculminating aspect + bounded quantity of porridge). By contrast, example (12),
which has a count noun sg. object, only allows the latter kind of reading. This is
because the quantity of a solid object, such as a book, is inherently bounded. The
reading where the porridge or the book is finished is another instance of "pulver-
ization" of a completed event, i.e., a metaphorical operation turning a solid object
into a fluid substance. By contrast, the readings where the porridge or the book is
not finished are progressive and thus metaphorically fluid substances by definition.

4. Objects with Number Quantifiers

Things are different, and even more complicated, when the object phrase includes a number quantifier, which makes the quantity bounded at the overall level. If the participation of the individual referents of the quantified object is sequential, then clause-level aspect can be conceptualized as bounded irrespective of whether the component events as such are culminating or nonculminating. For instance, in *Lisa ate the strawberries, one at a time* there are culminating subevents (eating one strawberry at a time) that follow each other in time. By contrast, in *Lisa admired the paintings at the exhibition, one at a time*, there are nonculminating though delimitative subevents (of admiring each painting in turn and only for a limited period of time) which then follow one another in time.

4.1. Quantifiers and Case Marking

As regards the case marking of quantified object nominals in Finnish, they maintain the quantificational-aspectual case opposition between the partitive and the cases that mark the "total object" (accusative or nominative). Quantified partitive objects can, at least in principle, be used in all functions of unquantified partitive objects. Their partitive case can thus indicate unboundedness of quantity, nonculminating aspect, negative polarity, or different combinations of these. By contrast, a quantified nominative plural object often has more specific functions. Consider examples (13–14), where the function of the object case is given in square brackets after the English translation.

(13) Löys-i-n   use-i-ta   sien-i-ä.
      find-PST-1SG   several-PL-PAR   mushroom-PL-PAR

      'I found several mushrooms.' [The partitive marks unbounded quantity.]

(14) Löys-i-n   usea-t   siene-t.
      find-PST-1SG   several-PL.NOM   mushroom-PL.NOM

      'I found several [of the] mushrooms' or: 'I found several [sets of] mushrooms (e.g., for different dishes).' [The nominative marks a combination of bounded quantity and culminating aspect.]

In (13), the partitive case of the quantified object is motivated by quantificational factors: the partitive designates an unbounded quantity, and the quantifier quantifies over it. The verb in (13) designates an achievement, which is an event type that culminates instantaneously. This means that the partitive cannot be motivated by aspect. If we compare (13) with our earlier example (6), which was similar to (13)

in other ways but lacked the quantifier ('I found sm mushrooms'), it is easy to see that the quantity expressed in the two examples is of a different kind, as has been emphasized by Yli-Vakkuri (1973, 1979). In spite of the partitive object motivated by quantificational factors in (13), there are reasons to argue that the quantifier actually renders the quantity bounded. However, a quantified plural object can also be in the pl. nominative, as in (14). The important question is, why (13), with its partitive object, is the default type for a quantified plural object, while (14), with its nominative, has more narrow and specific readings only.

As regards (14), the quantified pl. nominative object can have at least two different readings. First, it can designate a subset of a more extensive, definite set ('several of the mushrooms'; for an analysis of similar English expressions, see Langacker 2016: 160–63). Alternatively, it can designate multiple quantitatively bounded subsets, such as servings of mushrooms.

Such narrow and quite specific functions of the quantified nominative object may seem surprising if one considers the general function of the nominative as indicator of quantitative boundedness combined with culminating aspect. However, another important function of the nominative, in its opposition with the partitive in object marking, is to express definiteness in many uses (though definiteness is not systematically expressed in Finnish; more detailed accounts include Vilkuna 1992 and Chesterman 1991). In such a case, the number quantifier quantifies over a definite plural mass, in terms of Langacker 2016; hence the 'several of the' readings. By contrast, in the partitive example (13), the quantifier quantifies over an otherwise unbounded quantity of indefinite entities. The contribution of the quantifier in (13) is to render the quantity bounded, but the reference may still remain indefinite.

It can also be argued that a quantified partitive object, as in (13), is an intermediate instance between an unquantified partitive object, as in (6), which is both indefinite and quantitatively unbounded, and a quantified nominative object, as in (14). As argued above, the quantified nominative is ambiguous between the 'some of the X's' reading, where it selects a definite set as a base and then profiles a subset of it, and the 'many sets' kind of reading, where it designates a number of bounded subquantities, which can then either be definite or indefinite depending on the context. The last-mentioned function is especially clear in examples such as *Ost-i-n usea-t shakkinappula-t* [buy-PST.1SG several-PL.NOM chess.piece-PL.NOM] 'I bought several [sets of] chess pieces', where the quantified nominative object is likewise used together with the quantifier to convey the meaning with multiple sets. In such a context, the quantified partitive would lack the meaning of sets: it would merely mean 'I bought a number of chess-pieces' (not necessarily whole sets).

To get the full picture, consider examples (15–17):

(15) Ihastel-i-n   usea-a   sien-tä
     admire-PST-1SG   a.number.of-SG.PAR   mushroom-SG.PAR

'I admired a number of mushrooms [lit. "a-number-of a mushroom," as in *many a mushroom*].' [The partitive marks nonculminating aspect.]

(16) Ihastel-i-n   use-i-ta   sien-i-ä
     admire-PST-1SG   a.number.of-PL-PAR   mushroom-PL-PAR

'I admired a number of mushrooms.' [The partitive marks nonculminating aspect and possibly unbounded quantity.]

(17) E-n   löytä-nyt   usea-a   sien-tä.
     NEG-1SG   find-PTCP   a.number.of-SG.PAR   mushroom-SG.PAR

'I did not find a number of mushrooms.' [The partitive marks negation.]

In example (15), the sg. partitive is not triggered by quantity but by nonculminating aspect (of the verb 'admire') only. As can be recalled from section 2, sg. partitive object phrases can (in affirmative clauses) be in the partitive for aspectual reasons only. The component events, with the individual referents participating in them, can then be conceived of as simultaneous or sequential. In both readings, the component events instantiate nonculminating aspect (see Figure 5 for the reading with simultaneous subevents).
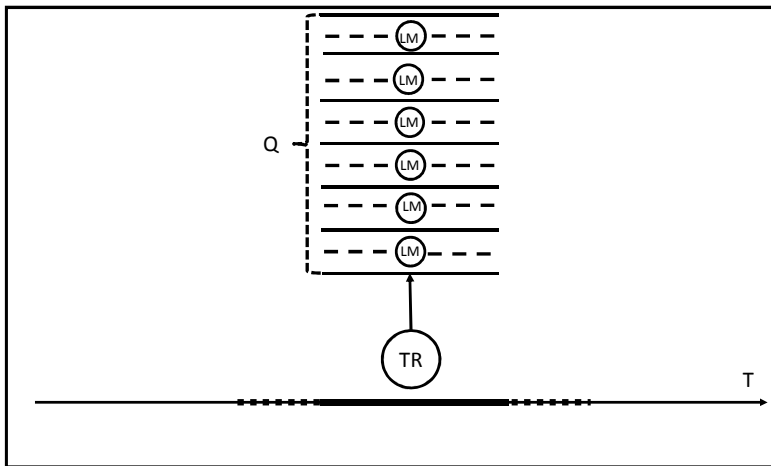

Figure 5. 'I admired several mushrooms' (simultaneously). The quantifier (Q) specifies a quantity participating in the event simultaneously. The collective unbounded aspect follows from the unboundedness of the component events.

Figure 5 illustrates how the quantifier pluralizes the reference of a singular nominal, while the partitive case still has its aspectual function: each component event is of a nonculminating type. Since each referent of the quantified object participates in an aspectually nonculminating component event, the meaning of the quantifier can be metaphorically compared to a bookshelf, with some substance (a nonculminating subevent) placed on each shelf. The shelves are then scrutinized sequentially in time, which renders the component events delimitative: each has a limited duration only.

In (16), the quantified object is in the plural partitive. This means that it is, as usual, ambiguous between the quantificational reading and the aspectual reading. In other words, the partitive object can be understood as designating an unbounded quantity in addition to nonculminating aspect, and the quantifier then quantifies over this unbounded quantity.

Example (17) shows that a quantified nominal in the singular can also be in the partitive case triggered by negative polarity alone. In (17), the lexical aspect type of the verb is an achievement, which means that it culminates instantaneously. The only motivation for the partitive is now negation. Example (17) also exposes a scope ambiguity between negation and the quantifier. First, it can mean 'I did not find a number of (but only few) mushrooms', in which case negation has a wide scope over the quantifier. Second, it can mean 'There were a number of mushrooms which I did not find (but Lisa, who was walking behind me, spotted them)'. In this reading, the quantifier has a wide scope over negation.

4.2. Quantifiers, Measure Phrases, and Time-Frame Adverbials

Another difference between unquantified examples such as (6–8) and quantified ones such as (13–17) concerns the acceptability of temporal measure phrases ('for an hour') and time-frame adverbials ('in an hour'). In general, as argued in section 2, Finnish transitive clauses with a bare (unquantified) partitive object allow temporal measure phrases but reject time-frame adverbials (a detailed analysis in Finnish can be found in Leino 1991). For instance, example (18), because of its nonculminating aspect, can be supplemented with a temporal measure phrase but not with a time-frame adverbial. However, (19) and (20), perhaps unexpectedly, allow both kinds of time expression.

(18) Ihastel-i-n   sien-tä   tunni-n/   (*tunni-ssa)
      admire-PST-1SG mushroom-SG.PAR hour-ACC   hour-INE

      'I admired a/the mushroom for (/*in) an hour.'

(19) Ihastel-i-n   usea-a   sien-tä   tunni-n/ tunni-ssa.
     admire-PST-1SG   several-SG.PAR   mushroom-SG.PAR   hour-ACC/ hour-INE
     'I admired several mushrooms (all together/each individually) for an hour.'
     [ACC]
     'I admired several mushrooms (in) an hour.' [INE + sequential delimitative]

(20) Ihastel-i-n   use-i-ta   sien-i-ä   tunni-n/ tunni-ssa.
     admire-PST-1SG   several-PL-PAR   mushroom-PL-PAR   hour-ACC/ hour-INE

     'I admired several mushrooms (all together/each individually) for an hour.'
     [ACC]
     'I admired several mushrooms (in) an hour.' [INE + sequential delimitative]

Since they have partitive objects, it is not surprising that examples (19) and (20) allow the measure phrase *tunnin* ('for an hour'). Note, though, that there is scope ambiguity between the measure phrase and the quantifier, which reflects the opposition between a distributive and a collective reading. In the former, each mushroom is admired for an hour's time (see Figure 6). In the latter, all mushrooms are admired simultaneously for an hour's time (for illustration of this reading, imagine adding a temporal measure phrase to Figure 5). The distributive reading is possible because it is possible to make a conceptualization with a sequential order of the subevents, which are conceptualized as delimitative: one mushroom is ad-
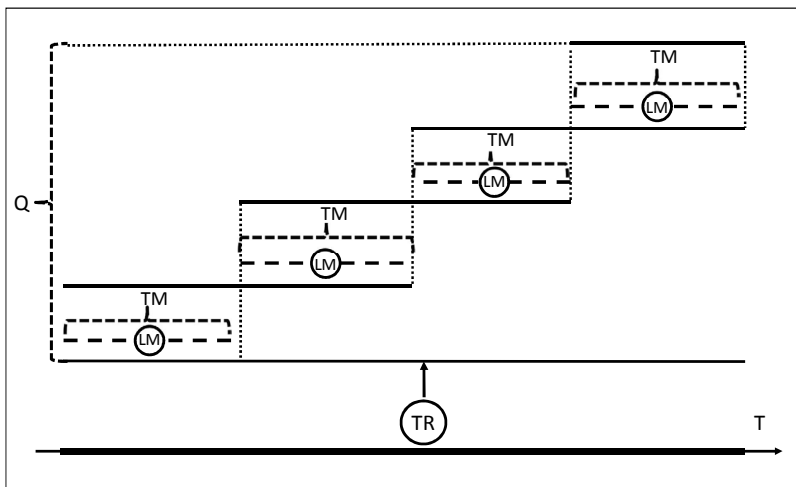

Figure 6. 'I admired several mushrooms (each) for an hour.' The quantifier (Q) has wide scope over the temporal measure phrase (TM), which received a distributive reading. It delimits the component events (of admiring one mushroom).

mired at a time, for a limited period only. By contrast, the collective reading renders the subevents simultaneous, or, perhaps more accurately, designates a singular event of 'admiring' where the grammatical object designates a replicate mass of mushrooms.

The acceptability of the time-frame adverbial ('in an hour') is unexpected against the fact that the examples have an atelic verb that designates a nonculminating event. What makes the time-frame adverbial acceptable is the quantifier. Importantly, the time-frame adverbial is only acceptable if each subevent (of admiring one mushroom at a time) is conceptualized as delimitative. When the subevents follow one another in time, the quantity of the mushrooms gradually increases and reaches the boundary specified by the quantifier. The reaching of the boundary then provides an endpoint to the overall event and makes it conceptualized as culminating, despite the fact that the component events are nonculminating (Figure 7). This demonstrates that there are in fact two layers of aspect (and sometimes quantification) playing a role in expressions with a quantified partitive object. In (19) and (20), the aspect is nonculminating at the level of the individual subevents but culminating at the higher, overall level.

Now consider the most complex case, illustrated by examples (21) and (22), with an accomplishment verb. What makes these examples complicated is the fact that such events can be conceptualized alternatively as culminating (if the whole event
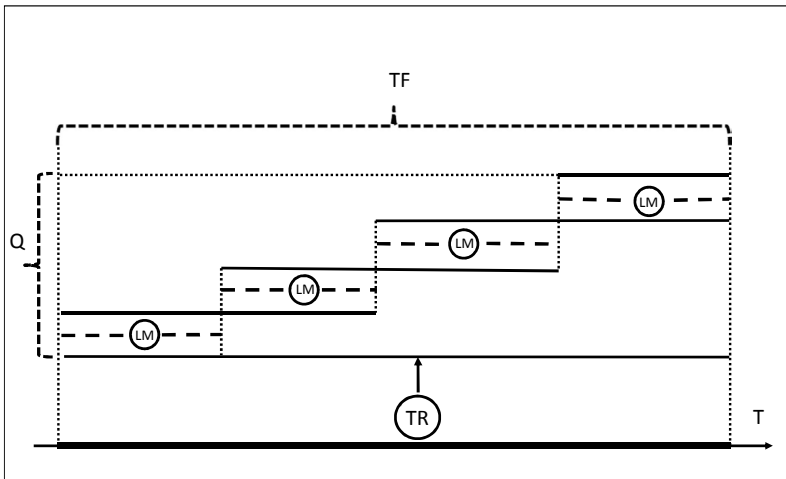

Figure 7. 'I read (from) several books (in) a day.' The time-frame adverbial (TF) specifies the duration of the overall event, which is bounded. The boundedness results when the quantity of the LM elements reaches the limit specified by the quantifier (Q). Each component event is atelic but delimitative: the books are read from one after another.

is profiled) or nonculminating (if only an intermediate sequence of the event is profiled). The latter is the case if the reading is progressive ('I was reading the book') or delimitative ('I read from the book for a while, but did not finish it').

(21) Lu-i-n   use-i-ta   kirjo-j-a   päivä-n/ päivä-ssä.
     read-PST-1SG   a.number.of-PL-PAR   book-PL-PAR   day-ACC/ day-INE

'I read (from) a number of books, (all/each) for a day.' [ACC]
'I read (from) a number of books (in) a day.' [INE]

(22) Lu-i-n   usea-a   kirja-a   päivä-n/ päivä-ssä.
     read-PST-1SG   a.number.of-SG.PAR   book-SG.PAR   day-ACC day-INE

'I read from a number of books, (all/each) for a day.' [ACC]
'I read from a number of books a day.' [INE]

In (21), the plural partitive again allows two readings. The first is purely quantificational, together with culminating aspect: each member of an unbounded quantity of books is read completely. The quantifier then quantifies over the unbounded quantity, rendering it bounded. The second reading assigns the partitive an aspectual function where it indicates the lack of culmination: the person reads from several books but not completely. The last-mentioned reading is the only option in example (22), because it has a singular partitive object phrase headed by a count noun, and the partitive can only designate nonculminating aspect (not quantity). Thus (22) explicitly states that each book is only read "from," not completely, and the aspect of the component events is delimitative.

Again, in both (21) and (22) the temporal measure phrase *päivän* 'for a day' displays a scope ambiguity with the quantifier. Example (21) means either 'I read (from) several books during (one and the same) day' or 'I read (from) several books, each for a day's time'. In both cases, the example is vague as to whether each reading event included a culmination or not. Example (22) has the same scope ambiguity, but now the aspectual sg. partitive explicitly indicates the lack of culmination, i.e., that no book is read completely.

Despite the partitive object in (21) and (22), the time-frame adverbial *päivässä* 'in a day' is also felicitous, which has been considered an exceptional feature of such clauses by Yli-Vakkuri (1973, 1979). The reason behind its acceptability is that the quantifier ('a number of') renders the quantity bounded at the overall level. Since the time-frame adverbial only combines with otherwise bounded events, it coerces a reading to the subevents where these are conceptualized as delimitative and sequential. This renders the overall aspect bounded: when all intended books have been read "from," the event reaches its endpoint. What constitutes the endpoint is the reaching of the quantity designated by the quantifier.

Unlike the temporal measure phrase, the time-frame adverbial *päivässä* 'in a day' necessarily has a wide scope over the quantifier in (21) and (22). This means that all the books are read during one and the same day; again, the component events may be culminating or nonculminating. The time-frame adverbial cannot have narrow scope (which would result in a distributive reading) in (22). This is because the singular partitive object explicitly means that the subevents are nonculminating (no book is read completely), and, as is well known, a time-frame adverbial does not combine with unbounded (nonculminating) predications. Note that example (21) is more flexible in this respect, because the plural partitive does not necessarily designate nonculminating aspect but can alternatively be understood as designating unbounded quantity only. In this case, the reading of each book may be completed. This vagueness of the plural partitive is also what makes it possible for the time-frame adverbial to relate with the individual component events in (22), with the condition that these are conceptualized as culminating. Also consider the similar, attested example (23), with the quantifier *moni* 'many' in the plural partitive.

(23) Mä   ole-n   luke-nut   mon-i-a   kirjo-j-a   yhde-ssä
      1SG   be-PRES.1SG   read-PTCP   many-PL-PAR   book-PL-PAR   one-INE

      päivä-ssä.
      day-INE

      (Siis ihan paksuja kirjoja.)

      'I have read many books in just one day [each]. (So indeed quite thick
      books.)   http://www.vauva.fi/keskustelu/612319/ketju/
                                             ehdinko_lukee_tanaan_100_sivuu

In (23), which in principle is ambiguous the same way as (22) (the time-frame adverbial could have both a collective and a distributive reading), the author's point is that (s)he is a fluent reader who can read a complete, thick book in just one day. Thus the context reveals that the distributive reading is intended, and the time-frame adverbial then has narrow scope.

By contrast, if used in examples similar to (21) and (22), a quantified nominative "total object," be it singular or plural, means that each individual book is read completely. This is why it rejects temporal measure phrases (as total objects usually do; for some exceptions, see Huumo 2005), but allows a scope alternation with time-frame adverbials. Consider (24) and (25):

(24) Lu-i-n   usea-n   kirja-n   viiko-ssa / *viiko-n.
      read-PST-1SG   a.number.of-SG.ACC   book-SG.ACC   week-INE / week-ACC

      'I read a number of books (completely), (all/each) in a week.'

(25) Lu-i-n   usea-t   kirja-t   viiko-ssa / *viiko-n.
     read-PST-1SG a.number.of-PL.NOM book-PL.NOM   week-INE / week-ACC

'I read a number of books, (all/each) in a week.'

The temporal measure phrase, which combines with otherwise nonculminating events only, is unacceptable in both (24) and (25). In these examples, both the subevents (of reading one book) and the collective event (of reading a larger quantity of books) are of the culminating type, since the pl. nominative object means that each book is read completely.

In metaphorical terms, both the collective event and the individual subevents are solid objects. This two-level boundedness is the reason for the scope ambiguity between the quantifier and the time-frame adverbial ('in a week'), the general function of which is to designate a time frame for a bounded event. Now it is possible that the reading of each book in the set takes one week, or that the reading of the whole set takes one week.

5. Conclusion

In this work I have analyzed the aspectual and quantificational interplay between Finnish number quantifiers and the aspectual case marking of the object. Even though Finnish number quantifiers behave like adjectival modifiers and agree with the quantified nominal in number and case, the quantity they designate, though vague, reflects a sense of boundedness overall. This is why quantified objects have features of so-called total objects and make the overall aspect conceptualized as bounded, even in instances where they are marked with the singular partitive that explicitly marks the lack of culmination in the component events. However, the partitive nevertheless indicates quantity and/or aspect at the level of the individual subevents, reflecting their unbounded nature, which may be due to unbounded quantity, nonculminating aspect, or a combination of the two.

In metaphorical terms, the quantifier sets up a multiple container that consists of more than one empty "slot" to be filled by the fluid substance designated by the partitive object. Because the quantifier is a nominal and not a verbal element, the quantity must consist of a replicate mass. This means that in each component event the referent of the object that participates is different from those that participate in other component events. An iteration of an activity as such (for instance, an iterated action directed towards a single object) does not trigger a quantifier (in the same way the English *I read many books* cannot mean that I read one and the same book for many times). The nominal quantifier thus designates a replicate mass, each member of which participates in the process once. However, the fluid substance filling the empty slots of the metaphorical container may consist of sub-

stance in literal terms, in which case the filler is an unbounded mass, or in metaphorical terms, in which case the filler is an aspectually unbounded event.

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