

# A unified account of nominal distributivity, *for*-adverbials, and measure phrases\*

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## 1 Scope of inquiry

Time and again, semanticists have noted analogies between various properties of distributive readings of quantificational noun phrases (QNPs), pseudopartitives, and *for*-adverbials. Despite this, they are usually analysed separately.

- (1) a. *Distributive QNPs*: Three boys each ate a cake.  
b. *Pseudopartitives*: three liters of water  
c. *For-adverbials*: push the cart for three hours

In this talk, I first systematize the analogies and complete the picture in some corners. Then, I formally relate the three constructions, and I derive their properties from a single operator.

Previous analyses were not designed to account for all three constructions at the same time. Accordingly, I not only assess how well they generalize beyond their intended purpose, but I also evaluate them in their own right. Even so, this analysis improves on previous accounts in several ways.

Although I will not focus on this in the talk, the analysis of distributive quantification is compatible with more general analyses of cumulative and collective quantification such as Landman (2000).

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## 2 Key ideas

1. I establish correspondences between the constituents in the three constructions and I show that the selectional restrictions on corresponding constituents are identical across constructions.
2. In each construction, two overt constituents are related by a covert function (thematic role or measure function). There are restrictions on which kind of function can occur, and these are again identical across constructions.
  - In (1a), *three boys* is related to *ate a cake* by the function **agent**
  - In (1b), *three liters* is related to *water* by the function **volume**
  - In (1c), *three hours* is related to *push the cart* by the function **duration**
3. The restrictions on acceptable **constituents** require that some condition which holds of a certain event or individual also hold of certain parts of that event or individual. To express these restrictions, I generalize and unify existing notions of atelicity, mass reference, and distributive reference.
4. The restrictions on acceptable **functions** and the restrictions on acceptable constituents follow from one and the same constraint. We no longer need notions such as *extensive* or *monotonic measure function*. These notions had been previously proposed to characterize the class of functions acceptable in pseudopartitives.

## 3 Plan of the talk

Section 4 introduces some **background assumptions**.

Sections 5, 6, and 7 look at **each construction in isolation**. Each section characterizes the restrictions on the constituents and on the covert function in one construction.

Section 8 compares restrictions on constituents **across constructions**. Section 9 compares restrictions on functions. The focus is on formulating constraints and successively refining them. This lays the groundwork for a proper analysis.

Section 10 looks at **pragmatic factors**.

Section 11 is devoted to **explaining the patterns**. I propose that all the previously discussed properties and similarities can be explained by positing a single operator. The operator can be compositionally integrated into standard mereological frameworks of aspect, plurality and quantification. It is a generalization of the well-known D operator (Link, 1983; Lønning, 1987; Roberts, 1987).

## 4 Background assumptions

I assume an event semantics in the style of Davidson (1967); Parsons (1990); Krifka (1998), where thematic roles are functions from events to individuals. I assume an analysis of plurals and mass nouns as in Link (1983) and of telicity as in Krifka (1998). These analyses assume that events, individuals, and time intervals are each ordered in part structures.

For any entities  $e, e', e''$  in one of these domains, we write  $e \leq e'$  to say that  $e$  is part of  $e'$ , and  $e = e' \oplus e''$  to say that  $e$  is the sum of  $e'$  and  $e''$ . These notions can be defined in terms of each other, e.g. we can take  $\oplus$  as primitive and write  $e \leq e'$  just in case  $e \oplus e' = e'$ . We write  $e < e'$  for  $e \leq e' \wedge e \neq e'$ . Each of these domains is assumed to be closed under sum. Instead of “part of” we also say “subevent of” or “subinterval of” etc.

We can talk of properties of one-place predicates over events and individuals. We call a predicate *homogeneous* iff whenever it applies to an entity, it also applies to all of its parts. A predicate is *quantized* iff whenever it applies to an entity, it doesn't apply to any of its parts.

- Mass nouns (*water*), plurals (*chairs*), and atelic predicates (*push a cart*) are **homogeneous**
- Count nouns (*chair*) and telic predicates (*eat a cake*) are **quantized**

The next sections look at the properties of each construction in isolation.

## 5 Distributive readings of QNPs

- (2) Each boy ate a cake.

Terminology (partly following Choe, 1987; Gil, 1989; Choe, 1991):

- (3) **Share:** ate a cake  
**Key:** each boy  
**Map:** agent

**Which Shares are compatible with this construction?** The Share (VP) must be compatible with a distributive NP. A collective VP is not acceptable (Bartsch, 1973; Kroch, 1974).

- (4) a. Each boy ate a cake.  
 b. \*Each soldier surrounded a castle.

What exactly does it mean for a VP to be “compatible”? Intuitively, (4a) is good because a boy by himself can eat a cake, and (4b) is bad because a soldier by himself cannot surround a castle. Here’s one way of conceptualizing this: A “compatible” VP applies to parts of the whole event; an “incompatible” VP applies only to the whole event.

## 6 Pseudopartitives

Various authors have likened covert functions in pseudopartitives to thematic roles (Parsons, 1970; Abney, 1987; Schwarzschild, 2006). Building on this intuition, let’s extend the terminology from the last section to pseudopartitives:

- (5) three liters of water

**Share:** water  
**Key:** three liters  
**Map:** volume

**Which Shares are compatible with this construction?** Shares must be mass nouns or plurals, not singular count nouns. (Krifka, 1989, 1998; Schwarzschild, 2002, 2006)

- |     |                     |                             |
|-----|---------------------|-----------------------------|
| (6) | 10 minutes of music | <i>mass noun</i>            |
|     | 10 grams of apples  | <i>plural count noun</i>    |
|     | *10 minutes of song | <i>*singular count noun</i> |
|     | *10 grams of apple  | <i>*singular count noun</i> |

Note that *10 minutes of song* is marginally acceptable but does *not* refer to a single 10-minute song. This suggests that *song* is coerced into a mass noun here.

**Which Maps are compatible with this construction?** Map must be a measure function whose value increases as you go from parts of an object to the whole – like *volume*, *weight* etc. By contrast, *temperature* and *speed* are out. (Krifka, 1989, 1998; Schwarzschild, 2002, 2006)

- |     |                                 |                     |
|-----|---------------------------------|---------------------|
| (7) | six tons of apples              | <i>weight</i>       |
|     | four feet of snow               | <i>height</i>       |
|     | two meters of cable             | <i>length</i>       |
|     | one hour of music               | <i>time</i>         |
|     | *three degrees Celsius of water | <i>*temperature</i> |
|     | *60 miles per hour of highway   | <i>*speed</i>       |

## 7 *for*-adverbials

Again, I extend the terminology from the previous sections:

- (8) eat a cake for three hours

**Share:** eat a cake

**Key:** three hours

**Map:** duration

**Which Shares are compatible with this construction?** *for*-adverbials can be straightforwardly applied to atelic Shares. They are odd with telic Shares or require reinterpretation. (e.g. Vendler, 1957)

- |     |                                    |                                |
|-----|------------------------------------|--------------------------------|
| (9) | a. be available for three hours    | <i>state (atelic)</i>          |
|     | b. push a cart for three hours     | <i>activity (atelic)</i>       |
|     | d. #reach a summit for three hours | <i>#achievement (telic)</i>    |
|     | c. #eat a cake for three hours     | <i>#accomplishment (telic)</i> |

**Which Maps are compatible with this construction?** Map must be a measure function whose value increases as you go from parts of an event to the whole – like *duration*, *spatial extent* etc. By contrast, *speed* is out. Also, the function must be applicable to events. This excludes *weight*, *temperature*, etc.

- |      |                       |                       |
|------|-----------------------|-----------------------|
| (10) | drive for three hours | <i>duration</i>       |
|      | drive for 30 miles    | <i>spatial extent</i> |
|      | *drive for 30 mph     | <i>*speed</i>         |

## 8 Generalizing across constructions: Restrictions on Shares

Summary of examples:

Construction	Acceptable Share	Unacceptable Share
Distributive QNPs	(Three boys each) ate a cake	*...surrounded a castle
Pseudopartitives	(three grams of) grapes	*...grape
<i>for</i> -adverbials	push a cart (for three hours)	*eat a cake ...

Characterizations:

Construction	Acceptable Share	Unacceptable Share
Distributive QNPs	distributive VPs	*collective VPs
Pseudopartitives	mass nouns, plural nouns	*count nouns
<i>for</i> -adverbials	atelic VPs	*telic VPs

**Constraint on Shares, first attempt:** Shares must be *homogeneous* <sup>1</sup>

- A property is *homogeneous* iff any event/individual with that property has parts and all its parts also have that property

Prediction: Since the property denoted by a given share is either homogeneous or it isn't, it should behave equally in all three constructions.

Immediate problem:

- (11) a. ✓ Three boys each ate a cake.  
 b. # eat a cake for three hours

Doesn't this just show that our generalization is on the wrong track? – No: the problem is with the attempt in the first place:

- (12) a. # sweep the road clean for ten hours.  
 b. ✓ sweep the road clean for ten miles.
- (13) a. ✓ drive cows to the corral for three hours  
 b. # drive cows to the corral for three miles

<sup>1</sup>For the parallel between mass nouns and atelic predicates, see Mourelatos (1978); Hoepelman and Rohrer (1980); Bach (1986); Krifka (1989, 1998).

Note that *drive cows towards the corral for three miles* is OK, so (13b) can't be explained by selectional restrictions of the verb.

Intuition: *for an hour* shouldn't require the VP to be homogeneous along all dimensions. The VP should only be homogeneous with respect to time.

- A *temporal subevent* of an event  $e$  is a subevent whose duration is properly included in the duration of  $e$ .
- A property is *temporally homogeneous* iff for any event with that property, all its temporal subevents have that property as well, and there are such subevents

**Constraint on Shares, second attempt:** Shares must be homogeneous with respect to the Map, i.e. either temporally or spatially homogeneous (Krifka, 1998).

**Problem:** The property *drive cows into the corral* is NOT temporally homogeneous. Any event of which it holds contains temporal subevents of which it doesn't hold, e.g. any shorter subevent in which some cow or cows get driven only halfway to the corral.

**Solution.** We can build on a competing, historically earlier analysis for *for*-adverbials (Dowty, 1979; Moltmann, 1991): A sentence like (13a) is OK, not because *drive cows to the corral* holds of every subevent (it doesn't) but because it holds at each subinterval of the Key. Or more precisely, each subinterval of the Key is the duration (Map) of an event of which *drive cows to the corral* (Share) is true.

We can formulate this constraint as follows:

**Constraint on Shares, third attempt:** For every part of the Key there must be a Share which the Map maps to that part.

The constraint predicts that pseudopartitives don't occur with singular count nouns (Schwarzschild, 2002, 2006):

- (14) ✓ two hours of work  
    ≈ There is an interval of two hours and each of its parts is the length of some work  
    ⇒ OK because every temporal part of work is work

- (15) # two hours of job  
≈ There is an interval of two hours and each of its parts is the length of some job  
⇒ Odd because *job* is quantized; parts of a job are not again considered jobs

Distributive QNPs satisfy the constraint – not surprisingly:

- (16) ✓ Three boys each ate a cake.  
≈ There is a sum of three boys and each of its parts ate a cake  
⇒ OK because a boy by himself can eat a cake
- (17) # Three boys each surrounded a castle.  
≈ There is a sum of three boys and each of its parts surrounded a castle  
⇒ OK because a boy by himself cannot surround a castle

More interestingly, it solves a problem which Schwarzschild (2006) could only handle by appealing to pragmatics: *three inches of cable* is OK even though not every part of a cable is a cable – only parts with shorter length but equal diameter are cable. Note that the Map here is length, not diameter.

- (18) ✓ three inches of cable [*meaning: cable with a length of 3in*]  
≈ There is a spatial interval of three inches and each of its parts is the length of some cable  
⇒ OK because dividing a cable perpendicularly to its length gives parts which are again cable
- (19) # three inches of cable [*meaning: cable with a diameter of 3in*]  
≈ There is a spatial interval of three inches and each of its parts is the diameter of some cable  
⇒ Odd because dividing a cable along its length does not give parts which are again cable

**Results of this section.**

- A constraint that prevents telic, collective, and count terms from being Shares.
- A novel argument that *for* distributes the VP (Share) over subintervals, not subevents – following Dowty (1979); Moltmann (1991) contra Krifka (1998).
- A more straightforward account of  $\checkmark$ *three inches of cable* than Schwarzschild (2006).

## 9 Generalizing across constructions: Restrictions on Maps

Summary of examples:

Construction	Acceptable	Unacceptable
Pseudopartitives	three liters of water	*three degrees Celsius of water
<i>for</i> -adverbials	drive for three hours	*drive for 30 miles per hour

Characterizations:

Construction	Acceptable Map	Unacceptable Map
Pseudopartitives	volume	*temperature
<i>for</i> -adverbials	duration	*speed

**Constraint on Maps, first attempt:** Maps must be *extensive* (Krantz et al., 1971) or *monotonic* (Lønning, 1987; Schwarzschild, 2002, 2006).

These are the constraints that Krifka (1989, 1998) and Schwarzschild (2002, 2006), respectively, propose for pseudopartitives (though not for *for*-adverbials). The two notions are very similar:

- A measure function  $\mu$  is *extensive* iff
  1. for any  $a, b$  that don't overlap,  $\mu(a) + \mu(b) = \mu(a + b)$ ; and
  2. for any  $c, d$ , if  $c$  is a part of  $d$  and  $\mu(d) > 0$  then  $\mu(c) > 0$ .
- A measure function  $\mu$  is *monotonic* iff for any  $a, b$ , if  $a$  is a proper part of  $b$ , then  $\mu(a) < \mu(b)$ .

### Examples:

- Volume is extensive because the volume of the sum of any two nonoverlapping entities is the sum of their volumes, and no entity with nonzero volume has a part with zero volume. It is monotonic because any proper part of an entity has a smaller volume than that entity.
- Temperature is not extensive because the temperature of the sum of two nonoverlapping entities is not the sum of their temperatures but something closer to their average. It is not monotonic because proper parts of an entity are not colder than that entity.

**Problem 1:** In QNPs, Maps correspond to thematic relations, but these are generally not extensive/monotonic. Two nonoverlapping events (e.g. John’s running from his house halfway to the store and his subsequent running to the store) can have the same agent, and their sum (John’s running from his house to the store) will again have the same agent.

Neither Krifka nor Schwarzschild attempted to account for QNPs. But we find the same problem even if we only look at pseudopartitives:

**Problem 2:** Height is an acceptable Map but it is not extensive/monotonic:  
(20) Three feet of snow covered the field.

Imagine a scenario in which (20) is true. Call the north half of the field  $a$  and the south half  $b$ . Note that  $a$  and  $b$  don’t overlap and that  $a$  is a part of  $a + b$ . The Map,  $\mu$ , in (20) is height. We have  $\mu(a) = \mu(b) = \mu(a + b) = 3ft$ , so  $\mu$  is not extensive and not monotonic.

Schwarzschild (2002, 2006) discusses this problem but does not offer a formalized account. He assumes that pragmatics supplies both the Map and the relevant part-whole structure. We can do better and assume that pragmatics only supplies the Map.

The intuition is that (20) is OK because for each value smaller than three feet, there is some part of the snow which has that height – you can disregard the fact that more than one part has three feet of height. Here’s an attempt to make this more explicit:

<p><b>Constraint on Maps, second attempt:</b> For every part of the Key (three feet), there must be a Share (snow) which the Map (height) maps to that part.</p>
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<p>Note that this is exactly the same as the last Constraint on Shares!</p>
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Examples:

- (21) ✓ three liters of water (= 5)  
 ≈ There is a spatial interval of three liters and each of its parts is the volume of some water  
 ⇒ OK because as you go to smaller parts of water, their volume will always drop
- (22) ✓ three feet of snow (= 20)  
 ≈ There is a spatial interval of three feet and each of its parts is the height of some snow  
 ⇒ OK because the following subdivision will make it true: a 1-foot thick cover of snow; a 2-foot thick cover of snow, etc.
- (23) ✓ drive for three hours (= 10)  
 ≈ There is a temporal interval of three hours and each of its parts is the duration of some driving event  
 ⇒ OK because *drive* is temporally homogeneous

Note that the constraint most likely involves a modal component. I leave its exact formulation for later work:

- (24) # three degrees Celsius of water (= 7)  
 ≈ There is a temperature interval of three °C and each of its parts is the temperature of some water  
 ⇒ As is, predicted to be OK as a description of water whose temperature follows a gradient. Could it be odd because as you go to parts of water, their temperature will not **necessarily** become lower? But how does that fit with QNPs?

**Results of this section.**

- A constraint that predicts *three feet of snow* to be acceptable even though height is not monotonic or extensive – contra Krifka (1998); Schwarzschild (2006).
- The same constraint also prevents atelic, collective, and mass terms from being Shares (see last section), so notions like monotonicity are not separately needed.

## 10 Pragmatic factors

**Constraint so far (repeated):** For every part of the Key there must be a Share which the Map maps to that part.

As Dowty (1979) already noted, this is not exactly true: there may be very small parts of the Key for which there is no Share: *waltz for an hour* is OK despite the existence of subevents of less than three steps, which do not constitute waltzing.

Also, Keys can tolerate temporal “gaps”. The following contrast is due to B. Partee, cited in Vlach (1993):

- (25) a. Mary slept for a week *almost continuously*  
b. Mary slept in the attic for a week *allows for daytime breaks*

This example suggests that the licensing of gaps in the Key is a pragmatic effect.

A similar effect occurs in pseudopartitives:

- (26) three tons of furniture

This is OK even though not every part of furniture is furniture.

And a similar effect also occurs in distributive readings of QNPs:

- (27) Five Americans won a Nobel Prize last year.

This can be true even if three Americans jointly won a Nobel Prize. (Note: the collective reading is excluded by world knowledge. No more than three people can jointly be awarded a Nobel Prize.)

So we reformulate our constraint for the last time:

**Constraint, final formulation:** For every **relevant** part of the Key there must be a Share which the Map maps to that part.

## 11 Formalization

We start by translating the constraint:

$$(28) \quad \lambda\text{Key}.\lambda\text{Share}.\lambda\text{Map}.\quad \exists k[\text{Key}(k) \wedge \forall k'[k' < k \wedge \text{relevant-part}(k') \rightarrow \exists s'[\text{Share}(s') \wedge \text{Map}(s') = k']]]$$

I assume that the order in which the arguments *Key*, *Share*, *Map* are supplied can be switched as needed, e.g. by a type-shifting rule.

This has the wrong type at least for pseudopartitives – give it a *Key*, a *Share*, and a *Map*, and it returns a truth value. But a pseudopartitive is not a truth value!

**First attempt:** After *Key*, *Share*, and *Map* have been processed, return an entity that contains all the *Shares*.

$$(29) \quad \lambda\text{Key}.\lambda\text{Share}.\lambda\text{Map}.\quad \lambda s.\exists k[\text{Key}(k) \wedge \forall k'[k' < k \wedge \text{relevant-part}(k') \rightarrow \exists s' < s [\text{Share}(s') \wedge \text{Map}(s') = k']]]$$

Let's see if this gives us the right translations. I simplify *Keys* and *Shares* here:

Construction	Example	Translation
Distributive QNPs	3 boys ate a cake	$\lambda e \exists x \text{ 3-boys}(x) \wedge \forall x' < x \exists e' < e \text{ ate-a-cake}(e')$
Pseudopartitives	3 liters of water	$\lambda x \exists d \text{ 3-liters}(d) \wedge \forall d' < d \exists x' < x \text{ water}(x')$
<i>for</i> -adverbials	talk for 3 hours	$\lambda e \exists t \text{ 3-hours}(t) \wedge \forall t' < t \exists e' < e \text{ talk}(e')$

This predicts that other constituents will always interact with an entity containing all the *Shares*. This prediction is clearly correct for pseudopartitives: in *John drank three liters of water* John drinks the water and not the liters. It also seems correct for *for*-adverbials:

- (30) **Surprisingly/Tactlessly/Scandalously**, John talked for an hour.  
*Incorrect paraphrase:* One hour is such that at each of its moments John talked surprisingly/ tactlessly/ scandalously.  
*Better paraphrase:* One hour is such that at each of its moments John talked and **the whole event** was surprising/tactless/scandalous.

For QNPs, we can test this by looking at ditransitives in which one internal argument distributes over the other. In this case, the external argument interacts with the whole event:

(31) **Three boys** gave six girls two flowers (i.e. two flowers per girl). (Schein, 1993; Landman, 2000)

**Share:** GET two flowers<sup>2</sup>

**Key:** six girls

**Map:** recipient

*Incorrect paraphrase:* Six girls each got two flowers, and in each event, three boys were the sum total of the agents involved.

*Better paraphrase:* Six girls each got two flowers, and three boys were the sum total of the agents involved in **the whole event**.

*Side note:* Examples like (31) involves both cumulative and distributive quantification. Many standard accounts of distributive QNPs, e.g. the systems described in Landman (2000), return truth values for distributive QNPs and are therefore unable to derive such examples compositionally. Although I won't go into details here, the present analysis provides a compositional account.

We are still missing something. We are returning an entity that contains all the Shares, but it should contain *all and only* the Shares. Otherwise, we predict that "Surprisingly, John talked for an hour" can be true in a scenario where the event that John talked for an hour was not surprising, but that event was part of a larger event that was indeed surprising.

This can be expressed by using the **\*\***-operator from Krifka (1986); Sternefeld (1998). See also Beck and Sauerland (2000). This operator is independently motivated from cumulative readings. It expresses closure of a two-place relation under argumentwise sum and is defined as follows (where  $\langle x_1, y_1 \rangle \oplus \langle x_2, y_2 \rangle =_{def} \langle x_1 \oplus y_1, x_2 \oplus y_2 \rangle$ , and  $\oplus$  is mereological sum):

$$(32) \quad **R = \min\{S \supset R \mid \forall x, y \in S : x \oplus y \in S\}$$

**Second attempt:**

$$(33) \quad \lambda\text{Key}.\lambda\text{Share}.\lambda\text{Map}.\lambda s.\exists k \text{ Key}(k) \wedge \langle k, s \rangle \in **\lambda k'\lambda s'[\text{relevant-part}(k') \wedge \text{Share}(s') \wedge \text{Map}(s') = k']$$

This entry does not spell out what it means to be a relevant part. This is a pragmatic notion and so it has to remain somewhat vague. One way of making this more concrete is requiring that each  $k'$  be an element of a contextually specified cover in the sense of Schwarzschild (1996). This results in the following,

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<sup>2</sup>I assume that ditransitives are decomposed into a transitive head and an agent head.

final entry:

(34) **Official entry:**  
 $\lambda\text{Key}.\lambda\text{Share}.\lambda\text{Map}.$   
 $\lambda s.\exists k \text{Key}(k) \wedge \langle k, s \rangle \in **\lambda k'\lambda s'[k' \in \text{Cov} \wedge \text{Share}(s') \wedge \text{Map}(s') = k']$

Applied to the three cases in (1), repeated here:

- (35) *Distributive QNPs*: Three boys each ate a cake.  
 $\lambda e\exists x \exists \text{boys}(x) \wedge \langle x, e \rangle \in$   
 $**\lambda x'\lambda e'[x' \in \text{Cov} \wedge \text{eat}(e') \wedge \exists y[\text{cake}(y) \wedge \text{th}(e')=y] \wedge \text{ag}(e')=x']$
- (36) *Pseudopartitives*: three liters of water  
 $\lambda x\exists d \exists \text{liters}(d) \wedge \langle d, x \rangle \in$   
 $**\lambda d'\lambda x'[d' \in \text{Cov} \wedge \text{water}(x') \wedge \text{volume}(x') = d']$
- (37) *For-adverbials*: push the cart for three hours  
 $\lambda e\exists t \exists \text{hours}(t) \wedge \langle t, e \rangle \in$   
 $**\lambda t'\lambda e'[t' \in \text{Cov} \wedge \text{push}(e') \wedge \text{th}(e') = \iota x[\text{cart}(x)] \wedge \tau(e') = t']$

The use of covers to determine the relevant parts of the Key has two immediate advantages:

- **Minimal-parts effect explained.** Covers do not always distribute down beyond a certain level of granularity: e.g. “The shoes cost \$50” talks about the price per pair, not per shoe (Schwarzschild, 1996). This explains the minimal-parts problem: *waltz for an hour* is OK despite the existence of subevents of less than 3 steps, which do not constitute waltzing. These subevents are not relevant and therefore do not occur in the cover. Similarly for *three tons of furniture*, which is OK despite the existence of very light parts of furniture which do not qualify as furniture. Dowty (1979); Moltmann (1991) account for this fact (for *for*-adverbials) by stipulation.
- **Frequentative readings explained.** *for*-adverbials can tolerate temporal “gaps”. Previous accounts have explained this e.g. by using silent frequentative operators inserted when the predicate is telic (van Geenhoven, 2004). However, the effect also shows up with atelic predicates and is dependent on pragmatics, as shown in (25), repeated here:

- (38) a. Mary slept for a week *almost continuously*  
 b. Mary slept in the attic for a week *allows for daytime breaks*

On my account, this is expected if we assume that covers can be *ill-fitting* in the sense of Brisson (1998): e.g. given the right context, “The boys built a raft” does not entail that *all* boys took part in building a raft.

#### Overall results.

- A constraint that subsumes and refines previous accounts of distributive readings of QNPs, atelicity requirements of *for*-adverbials, and monotonicity constraints on measure functions.
- An explanation of the pragmatic factors (minimal-parts effect, frequentative readings of *for*-adverbials in terms of contextual covers.
- A compositional implementation of the constraint, whose components are independently motivated from definite plurals and cumulative readings.

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