Distributivity and Interpretation: In Support of a Modal Treatment of the Progressive

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1 Introduction

This paper is concerned with progressive verbs that take distributively quantified objects. Such sentences are typically judged to be odd or incoherent:[1]

(1) a. ?Charlotte was eating every cookie.
b. ?Emily was climbing every tree.
c. ?Anne was bringing every chair.[2]

Distributive determiners require that the predicate apply to each member of the QP's restrictor set individually, rather than to the set as a whole. One of the basic assumptions about progressive sentences is that they refer to events that are not yet completed at the reference time. My hypothesis is that use of the progressive in (1a-c) creates a context that is not compatible with the distributive property of *every*. The lack of entailment from progressive to perfective displayed by progressive accomplishment predicates presents a problem when the object of the sentence contains a distributive determiner. The sentences are most naturally interpreted in contexts where the agent affects each object one by one, consecutively. However, if something happens to interrupt the in-progress event, and it does not complete, then in (1a), for example, there will be some cookies that Charlotte did not eat. If the event is never completed, it follows that some cookies in the quantified set will not be associated with the predicate. But *every* is a distributive determiner, which means that the predicate applies to each individual cookie. In such a situation, the meaning of every is not satisfied. My analysis makes use of Tunstall's (1998) treatment of distributivity: she proposed that distributive determiners require distribution of events, such that every member of the restrictor set must be associated with the predicate in a distinct subevent. Progressives with distributively quantifying objects are coherent in specific discourse contexts, and these contexts provide support for Tunstall's analysis, and highlight the difference in meaning between *each* and *every*.

2 Progressive verbs with distributively quantified objects

The awkwardness of the sentences in (1) is emphasized by specifying a reference time. In Situation A, the reference time is contained in the interval of time between 1:00 and 1:30; therefore, (2) ought to describe any subinterval of this interval. In fact, the sentence sounds odd in this context:

[1] Data for this thesis are drawn from my own intuitions as well as from elicitation with eight native speakers of English, only one of whom is a trained linguist. Unless otherwise indicated, the judgements reported reflect consistent results with most consultants.

[2] This awkwardness is restricted to sentences whose verbs that take Incremental Theme arguments (Dowty, 1991 and Krifka, 1992). Sentences without incremental themes are fine with *every* N objects:
i. Anne was pushing every button.
ii. Emily was stepping on every crack.
iii. Charlotte was tasting every cookie.

 Proceedings of the 2004 Texas Linguistics Society Conference, ed. Pascal Denis et al., 46-59. Somerville, MA: Cascadilla Proceedings Project.

(2) **Situation A**:
There were a dozen cookies on a plate. Charlotte ate the first cookie at 1:00, and continued eating them one by one. At 1:15 she was eating cookie six, and at 1:30 she finished the twelfth cookie.

?At 1:15, Charlotte was eating every cookie.

Another way to bring out the incoherence of these sentences in Situation A is through addition phrases that emphasize the sequential nature of the context:

(3) a. ?Charlotte was eating every cookie one by one.
b. ?Emily was climbing every tree individually.
c. ?Anne was bringing every chair in a certain order.

Past progressives can include an interrupting *when*-clause, which picks out a specific reference time and contributes the information that the in-progress event did not continue past this point:

(4) a. Charlotte was eating some cookies, when she vomited.
b. Emily was climbing a tree, when she fell.
c. Anne was bringing the chairs, when she spontaneously combusted.

An interrupting when-clause added to the sentences from (1), only emphasizes the oddness of the sentences:

(5) a. ?Charlotte was eating every cookie, when she vomited.
b. ?Emily was climbing every tree, when she fell.
c. ?Anne was bringing every chair, when she spontaneously combusted.

The addition of modifiers like *one by one*, or of the *when*-clause brings out the fact that the sentences are not coherent in the expected contexts (e.g. the context of Situation A for 1a). The expected reading of (a-c) is one in which at the reference time the agent has already affected some objects but not yet all of them.

3 Special discourse contexts

The effect of combining *every* with a progressive verb has been discussed previously by Cresswell (1985). He pointed out that the non-progressive sentence *John polished every boot*, must be analysed such that we get a reading for it,

> "…which makes it true of an interval iff over the whole interval every boot is polished though no single boot need be being polished over the whole interval." (Cresswell, p. 69).

In other words, the event of John's polishing every boot takes up the entire interval[3] of time occupied by the event. He does not need to polish all the boots over any subinterval. He polishes them one by one, until he has polished them all. In contrast, the progressive form, *John is polishing every boot*, claims that, "at every moment of the interval, John is polishing every boot." (p. 70). This sentence

[3] Bennett & Partee (1978) showed how sentences are true at intervals of time, rather than instants. For example, if John ate an apple between 2:00 and 2:15, then *John ate an apple* is not true at 2:00, 2:10, or 2:15, but rather the event of John eating an apple occupies exactly that interval of time.

requires a more unusual context, where every boot is polished for the duration of the whole interval. For example, John may have a boot-polishing machine[4].

The sentence in (1a) can be interpreted in a similar context. Situation B describes a situation in which Charlotte can be said to be eating every cookie at every moment of the interval of time over which the sentence is true. This is shown in (6), which is compatible with the context described by Situation B at any time between 1:00 and 1:30:

(6) **Situation B:**
Charlotte lined up all the cookies and ate them by taking a single bite from each one in turn. She took the first bite from the first cookie at 1:00. At 1:15, she had eaten halfway through each of the twelve cookies, and at 1:30 she finished the last bite of cookie twelve.

Charlotte was eating every cookie.

It is impossible to contrive a context in which (1b), *Emily was climbing every tree*, is interpretable: climbing every tree is something that has to be done one tree at a time.[5]

For his analysis of analysis of the sentence *John is polishing every boot* Cresswell assumes Dowty's treatment of the progressive as a sentential operator:

(7) a. Anne was smiling.

b. prog S
prog S
Anne was smiling

The required reading, where every boot is being polished over the entire interval, arises because the progressive operator is the scope of the distributive quantifier, and not the other way around[6]:

(8) a. S **NOT** b. S
QP prog S prog S
every boot QP S
prog S every boot

I assume that the context described in (6) by Situation B, which is the only context that supports *Charlotte was eating every cookie*, requires the same representation, in which the progressive operator is within the scope of *every*. As with Cresswell's example, this gives a reading in which every cookie is being eaten over the entire interval of time at which the sentence is true.

4 The modal treatment of the progressive

The meaning of the progressive is generally assumed to include a modal component. Modal treatments have been proposed by Dowty, 1979; Landman, 1992; Asher, 1992; Bonomi 1995, and others. Accomplishment events describe processes that have a logical culmination or endpoint (Pustejovsky, 19??). When an accomplishment event is described using the progressive, there is no

[4] Cresswell only discusses present progressives; however, I focus on the past tense because they can be used with a *when*-clause to bring out certain aspects of the progressive's meaning.
[5] (1c), *Anne was bringing every chair*, is coherent on a reading where the chairs are stacked together.
[6] Cresswell accounts for the wide scope of *every* as a result of quantifier raising, although this is not compatible with Heim & Kratzer's type-driven account of QR.

implication that it will be completed: (9a), but not (9b), can be used to describe the following situation, up to the point at which John was hit by the taxi:

(9) **Context**:
John stepped off the kerb and was walking towards the opposite side of the road, when he was run over by a taxi.

a. John was crossing the road.
b. *John crossed the road.

The progressive must be defined in a way that makes (9a), but not (9b) true in a context where John never gets across the road. In modal treatments, progressive accomplishments are realized in a non-actual world.

4.1 Dowty's treatment of the progressive

Dowty treats the progressive as a sentential operator whose function is to relate an interval *t* in the real world to a later interval *t'* in a non-actual world. In other words, a progressive sentence describes an event that is incomplete in the actual world at *t*, but complete in a non-actual world at *t'*:

(10) **Dowty's definition of the progressive**:
PROG(ϕ) is true at an interval *I* (in the actual world) iff there are an interval *I'* and possible world *w* such that *I* is a proper subinterval of *I'*, ϕ is true at *I'* in *w*, and *w* is exactly like the actual world at all times preceding and including *I*.

Dowty characterizes these non-actual worlds as inertia worlds, where everything happens exactly as it does in the real world. However, if an accomplishment is interrupted in the real world, as it is in the context described by (9), it continues in an inertia world to its natural conclusion. In other words, although John did not cross the road in the real world in (9), he did in every corresponding inertia world.

However, this analysis does not explain why the progressives from (1) are odd. The perfective forms of the same sentences are fine, and Dowty's treatment provides no explanation for the fact that they do not seem to have well-formed progressives:

(11) a. Charlotte ate every cookie.
b. Emily climbed every tree.
c. Anne brought every chair.

Under Dowty's definition of the progressive, (1a), *Charlotte was eating every cookie*, should be true at an interval in the real world as long as that interval is included in a larger interval in an inertia world. At that interval in the inertia world, (11a), which describes the completed event, must be true. However, in the context of Situation A, where the cookies are eaten one by one, the sentence is odd. This oddness is unexpected, because eating one cookie at *t* in *w* should be able to form part of eating every cookie at *t'* in *w'*.

4.2 Naumann & Pinon's treatment of the progressive

Naumann & Pinon (1997) have argued in favour of an event-based modal treatment of the progressive. They proposed that in order for a sentence in the progressive to be true, the agent of the event must, at the reference time, both be able to bring the event to its culmination, and must not intend *not* to carry out the event. More precisely, their denotation of the progressive requires that the speaker *believe* that the agent does not intend the non-completion of the event:

(12) **Naumann & Pinon's definition of the progressive**
PROG(ϕ) is true iff there is a world, *w*, where the event, *e*, described by PROG(ϕ) is part of an event, *e'*, described by ϕ, and iff the agent (if there is one) is able to bring *e* to its culmination, and does not intend that *e* not culminate.

Assuming Naumann & Pinon's denotation, the problem with the sentences from (1) could be treated as the result of a presupposition failure.[7] The progressive involves a presupposition that the agent intends to complete the event. The sentences are odd in the expected contexts because they do not accommodate this presupposition

If this hypothesis is correct, it is the presence of the distributive determiner that is the cause of the presupposition failure. Substituting *every* with a determiner that is not obligatorily distributive like *all the*, which like *every* is also universal, makes the progressive sentence acceptable in Situation A, as shown by the contrast between (13a) and (13b):

(13) **Situation A**:
There were a dozen cookies on a plate. Charlotte ate the first cookie at 1:00, and continued eating them one by one. At 1:15 she was eating cookie six, and at 1:30 she finished the twelfth cookie.

a. At 1:15, Charlotte was eating all the cookies.
b. ?At 1:15, Charlotte was eating every cookie.

A determiner is distributive if it combines with distributive predicates. Distributive predicates are those which apply to each element of a QP's restrictor set individually, rather than to the set as a whole (Dowty, 1988). *Every* is obligatorily distributive, which means it forces the predicates it combines with to have a distributive interpretation. The contrast between (13a) and (13b) arises because use of *every* in (13b) means that the predicate is applied to each cookie individually, rather than to the set as a whole. This means that the agent must intend to bring about a separate action for each cookie. But because there is no guarantee the whole event will ever be completed, there is no guarantee that such separate actions will occur. Thus, it is not possible to use *every*, which asserts that the predicate applies to each individual cookie. In (13a) use of *all the*, which is not obligatorily distributive, means the predicate is applied to the cookies as a set or group. This sentence can accommodate the presupposition that the agent intends to bring about a single action which would result in all the cookies being eaten.

Using Naumann & Pinon's denotation of the progressive, (13b) should be fine in the context of Situation A as long as it is understood that the speaker believes the agent intends to bring about a sequence of separate actions, one for each cookie. The fact that it is not suggests that in order for the speaker to presuppose the agent intends to complete a given action, then he or she must have at least started that action. However, (13b) is perfectly acceptable in Situation B, where Charlotte ate the cookies by taking one bite from each in turn. Interestingly, she need not have got as far as taking the first bite from cookie 12 for the sentence to be true. Situation C shows how the same event can be interrupted before she even starts cookie 12, but that at the reference time, 1:05, it is still true to say *Charlotte was eating every cookie*:

(14) **Situation C**: Charlotte lined up all the cookies and ate them by taking a single bite from each one in turn. She took the first bite from the first cookie at 1:00. At 1:05, she had eaten one bite from the first six cookies.

Charlotte was eating every cookie, when she vomited.

[7] Further investigation is required to determine whether the agent's intention to complete the event is a presupposition of using the progressive, or whether use of the progressive makes an assertion about the agent's intention.

(14) shows that a progressive sentence may contain *every* in its object and still accommodate the presupposition that agent intends to bring about multiple actions. However, this requires the special contexts described by Situation B (or C), rather than the more expected context described by Situation A.

5 Event distributivity (Tunstall, 1998)

Tunstall analyses distributive determiners as requiring distribution of events, such that each member of the quantified set is associated with a distinct subevent.. The idea of subevents was introduced by Bach (1986), who proposed that the domain of events has a part/whole structure like the domain of individuals. *John + Mary* equals the plural individual *John and Mary*, and two events can combine to form a third event. If John ate a cookie in e1, and made a cup of tea in e2, then e1 + e2 equals the event e3, in which John ate a cookie and made a cup of tea: e1 and e2 are subevents of e3. Tunstall's proposal is that distributive quantifiers also involve a part/whole event structure. In (15), not only does the predicate have to apply to each cookie in the quantified set individually, but a distinct subevent has to be found for each cookie such that the predicate applies to that cookie in that subevent:

(15) a. Emily ate every cookie.
b. Charlotte brought each chair.

5.1 Distributive quantifiers and distribution of events

Treating *each* and *every* as involving event distributivity accounts for the fact that (16a) and (16b) sound odd in a context where Carol put all the potatoes in a blender and pureed them (Tunstall, p. 105):

(16) **Context:**
Carol put all the potatoes together into the blender and pressed puree.

a. ?Carol mashed every potato.
b. ?Carol mashed each potato.

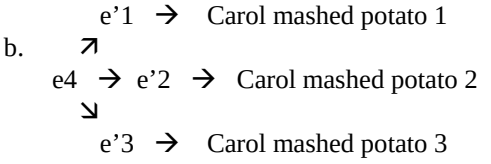
Instead, the sentences require a more unusual context, where Carol has to mash each one separately, one at a time:

(17) **Context:**
Carol lined up the potatoes on the counter and mashed each one individually.

a. Carol mashed every potato.
b. Carol mashed each potato.

The presence of a distributive determiner requires a distributive event. If there were three potatoes, then (18a) describes an event, e4, whose subevents are e'1, e'2, and e'3:

(18) a. Carol mashed every/each potato.

b.


The distributive event structure illustrated in (18b) is compatible with the context described in (17), where the potatoes are mashed individually. Each potato is mashed in its own separate subevent,

where the predicate applies to that potato alone. On the other hand, the context in (16) describes a single undifferentiated event, which is not compatible with use of *each* or *every*. When *each* or *every* is replaced with a quantifier that is not obligatorily distributive, the resulting sentences are compatible with this context:

(19) **Context:**
Carol put all the potatoes together into the blender and pressed puree.

a. Carol mashed the potatoes.
b. Carol mashed some potatoes.
c. Carol mashed all the potatoes.

Section 6 discusses how subevents are delimited, and the various dimensions according to which they may be differentiated from each other.

5.2 Distributivity and wide scope

Tunstall's analysis of distributive quantifiers as involving distribution of events[8], in which each individual element of the quantified set must be associated with its own subevent, predicts that the sentences from (1a-c), repeated as (20a-c) will sound odd on the expected reading:

(20) a. ?Charlotte was eating every cookie.
b. ?Emily was climbing every tree.
c. ?Anne was bringing every chair.

The sentences are not compatible with contexts where the objects are affected one at a time. It was hypothesized in section 4.2 that this was because of a conflict between the distributive property of *every* and the meaning of the progressive. Accomplishment events described in the progressive are not entailed to complete. Consequently, in (20) use of *every*, which asserts that the predicate applies to each individual member of the set denoted by the object QP, is infelicitous. Under Tunstall's analysis, the predicate must apply to each object in a separate subevent, one for each object. In progressive contexts, where completion of the event is not entailed, there is no way to guarantee that a distinct subevent can be found for each member of the restrictor set.

On the other hand, in contexts where a distinct subevent is found for each member of the quantified set, it follows that the distributive property of *every*, will be satisfied. Use of *every* requires that the predicate is applied to each object individually, and if each object has its own subevent, then the predicate naturally applies to that object individually. Situation B describes a fully distributive event, where there is a separate progressive subevent for each cookie. In this context, the assertion *Charlotte was eating every cookie* is possible. The meaning of the sentence is that Charlotte is in the progress of bringing about multiple subevents (one for each cookie) all of which she intends to complete:

(21) **Situation B:**
Charlotte lined up all the cookies and ate them by taking a single bite from each one in turn. She took the first bite from the first cookie at 1:00. At 1:15, she had eaten halfway through each of the twelve cookies, and at 1:30 she finished the last bite of cookie twelve.

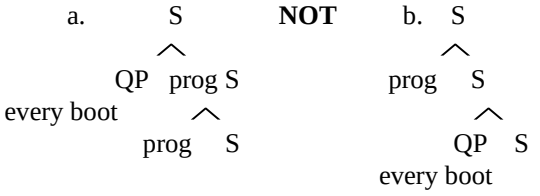
Charlotte was eating every cookie.

The preference of distributive quantifiers for wide scope has been discussed by Beghelli & Stowell (1997) among others. Tunstall analyses the tendency of *each* and *every* to prefer wide scope as the way that they meet their requirement for distributive event structures. Cresswell analysed the reading

[8] The precise kind of event distributivity forced by *each* and by *every* is different, and these differences are discussed by Tunstall in chapter 4 of her thesis.

of *John is polishing every boot*, where each individual boot must be polished over the entire event time rather than just over a subinterval of the event time, as resulting from the fact that the progressive operator is within the scope of the distributive quantifier. This is shown in (22):

(22) John is polishing every boot.



In the case of *Charlotte was eating every cookie*, the only possible reading is one in which the distributive quantifier has scope over the progressive, as in (22a). This scope configuration is compatible with the context described in Situation B, where each cookie is the object of a separate progressive subevent. The situation described by Situation A, where the cookies are eaten one by one, is compatible with the scope configuration in (b); however, as discussed in the previous sections, the sentence is not compatible with this context:

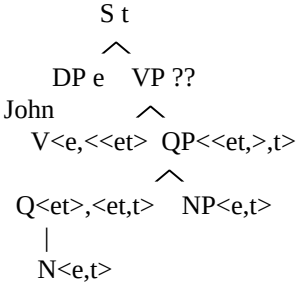
(23) Charlotte was eating every cookie.

a. every cookie > progressive
b. ?progressive > every cookie

Under Tunstall's analysis, where wide scope is associated with satisfying the requirement for a distributive event structure, (23) requires the context of Situation B because Situation A, does not satisfy this condition on the use of *every*. The context of the progressive brings out the connection between wide scope and the satisfying of this requirement. Cresswell's assumption is that in sentences like (23), which require a reading in which the agent simultaneously brings about multiple events, *every* has scope over the progressive. However, the progressive is assumed to be a sentential operator, and Cresswell provides no motivation for the movement of *every* to a position above the progressive operator.

General economy constraints forbid movement beyond that required by the necessary grammatical operations.If *every* takes scope over the progressive, such an extra movement is necessary. In general, QPs in object position adjoin above the subject at LF. Adjunction over the subject, or quantifier raising, is necessary because QPs are not of the right type to combine with a transitive verb (Heim & Kratzer 1998). QPs have the type <<et>,t>, and when a QP is in object position, the VP node fails to get an interpretation, because neither of its daughters can take the other as its argument:

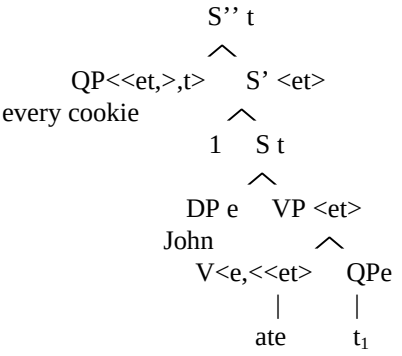
(24) a. John ate every cookie.



Quantifier raising (QR) repairs the type mismatch by moving the QP out of the VP and

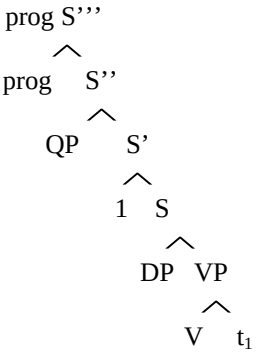
adjoining it to the S node. Applying predicate abstraction at the S' node provides a node with the type <et>, and *every cookie* is able to combine in the usual way by functional application:

(25)



Type-driven QR means the QP only has to adjoin above the subject; therefore, after QR a progressive sentence with a QP object looks like (26):

(26)



The interpretation facts indicate that the distributive QP has scope over the progressive operator; therefore, this extra movement must be motivated somehow. Under Tunstall's analysis, distributive quantifiers require wide scope when this is necessary to ensure a distributive event structure. If this analysis is correct, the basic configuration after QR, where the progressive has scope over the distributive quantifier, does not meet this requirement. My hypothesis is that the meaning of *every*, which is a distributive determiner, is not satisfied unless there is a progressive subevent for each cookie. If the progressive has scope over *every*, there will not be a progressive subevent for each cookie; therefore this configuration does not satisfy the event distributivity requirement of the sentence. This requirement is only satisfied when *every* takes wide scope, which guarantees a subevent for each cookie. But because each subevent is progressive, the sentence requires a context like Situation B. In this context, the agent brings about a distributive event with simultaneous subevents.

Tunstall does not discuss progressives; however, sentences like (23) provide extra support for her proposal. In the potatoes example, *Carol mashed each potato*, the sentence sounded odd in a context where the potatoes were put in the blender together and pureed. This was because this context does not allow any differentiation between subevents. Therefore, the predicate applies to the set as a whole rather than to each potato individually, which does not satisfy the meaning of *every*. The progressive sentence, *Charlotte was eating every cookie*, displays a different problem: because of the imperfective paradox, there are cookies that might not be associated with the predicate at all. Both sentences are fine in contexts that are created by wide scope of the distributive determiner: such contexts are compatible with sentences that describe fully distributive events.

6 Dimensions of event differentiation

The requirement of *every* for a fully distributive event structure, which is brought out in progressive contexts, means that a separate subevent must be found for each member of its restrictor set. Each subevent must be differentiated for every other subevent in some way. This requirement is illustrated in the last line of the following translation, where **e' ≠ e''**, says that every subevent must be totally differentiated from every other subevent:

(27) **Tunstall's translation of *every/each*** (p. 116):

$e \varepsilon [[\text{each N}]](f)$ iff
$\forall x [x \varepsilon [[N]] \rightarrow \exists e' \leq e [e' \varepsilon f(x) \&$
$\forall y [y \varepsilon [[N]] \& y \neq x \rightarrow \forall e'' \leq e [e'' \varepsilon f(y) \rightarrow e' \neq e'']]]]$

In non-progressive contexts, *every* does not require full event distributivity. For example, the sentence *Jamie lifted every basket* is fine if he lifted some baskets together: two baskets may be lifted in the same subevent. However, replacing *every* with *each* requires a different interpretation: each basket must be lifted in its own separate subevent (Tunstall, p. 117). In progressives, the situation is different: both *each* and *every* require full event distributivity where, in *Charlotte was eating every cookie*, for example, a distinct subevent must be found for each cookie. The same is true for *Charlotte was eating each cookie*. Situation B provides a context where such event distributivity is possible: at any subinterval of the reference time it is true to say that Charlotte is the agent of a different eating subevent for each cookie. This raises the question of how subevents are differentiated from one another. Tunstall describes four dimensions along which subevents may be differentiated: according to time, space, participants, or manner.

6.1 Event differentiation according to time

The most obvious dimension is with respect to time. The simple past sentence in (28a) describes a situation where Emily climbed the trees one at a time. Each tree is the object of its own subevent, differentiated from all other subevents with respect to time. In other words, each subevent occupies a separate subinterval of the event time. However, this "temporally differentiated" reading is not available for the progressive sentence in (29b):

(28) a. Emily climbed every tree.
b. ?Emily was climbing every tree.

Instead, (28b) seems to require that at the reference time, Emily is climbing every tree simultaneously, which is impossible.

6.2 Event differentiation according to space

Subevents may also be differentiated according to space. The following example from Tunstall (p. 105) provides an example of spatial differentiation. The addition of the phrase "at the same time" emphasized the fact that subevents are not differentiated from each other temporally:

(29) **Context:**
Carol lined all the potatoes up on the counter, with space in between them, and pressed a board on top of them, thus mashing every potato at the same time.

a. Carol mashed every potato, in fact she was able to mash them all at the same time..
b. Carol mashed each potato, in fact she was able to mash them all at the same time.

Each potato is mashed in its own subevent which is differentiatated from every other subevent with respect to space, although not with respect to time. Recall that the progressive sentence, *Charlotte was*

eating every/each cookie, must be interpreted in the context of Situation B, where Charlotte takes one bite from each cookie in turn:

(30) **Situation B:**
Charlotte lined up all the cookies and ate them by taking a single bite from each one in turn. She took the first bite from the first cookie at 1:00. At 1:15, she had eaten halfway through each of the twelve cookies, and at 1:30 she finished the last bite of cookie twelve.

a. Charlotte was eating every cookie.
b. Charlotte was eating each cookie.

Every and *each* are interchangeable in this context; therefore, according to Tunstall's translation of *each/every* this context must meet the distributivity conditions on the use of distributive determiners. The context described by Situation B illustrates how the delimiting of subevents is not a straightforward matter. In this context, subevents are not temporally differentiated, because the interval of time in which cookie 1 is eaten is actually interspersed with intervals of time in which cookie 1 is not being eaten, but instead cookies 2-12 are. The cookies themselves are separated on the plate from one another, and this seems to meet the requirements for differentiation of subevents according to space, even though the cookies are actually eaten in the same place, which is Charlotte's mouth.[9]

6.3 Event differentiation according to participants

Subevents may also be differentiated from each other according to participants. Use of an indefinite subject in the following progressive sentences provides a different agent, and thereby a different subevent, for each member of the set denoted by the object QP:

(31) a. A girl was eating every cookie.
b. A boy was bringing every chair.
c. A girl was climbing every tree.

When the indefinite is interpreted non-specifically, it is in the scope of the distributive determiner, which means that in (31a), for example, a different girl eats each cookie. Each girl is the agent of a different subevent; therefore, this context satisfies the event distributivity requirement of every, and ensures that the predicate applies to every single cookie in the quantified set, even if no girl actually finishes her cookie.

6.4 Event differentiation according to manner

Certain modifying adjuncts improve progressives with distributively quantifying objects. This seems to associate each object with a manner in which it was affected. If each object was affected in a certain way, it follows that each object was affected:

(32) a. Charlotte was eating every cookie herself.
b. Emily was bringing every chair quickly.

These sentences are interpretable in a context where the objects are affected one by one, and do not require special contexts like Situation B. This seems to be because the modifier contributes the information that separate subevents did in fact occur for each member of the quantified set. However, these sentences are subject to a different restriction. Because there is only a single agent, the sentence seems to imply or presuppose that each subevent actually occurred. The sentences sound very odd with the addition of a *when*-clause that interrupts the in-progress event:

[9] A context in which there is no event differentiation would be in a situation where Charlotte stuffed every cookie into her mouth at the same time. *Charlotte was eating every cookie* is judged to be slightly odd in this context.

(33) a. ?Charlotte was eating every cookie herself, when she vomited.
b. ?Anne was bringing every chair quickly, when she spontaneously combusted.

The addition of modifiers satisfies *every*'s requirement for event distributivity by asserting that each subevent was brought about in a certain manner. However, this restricts the interpretation of the sentence to contexts in which the event is understood to be completed. In other words, (32a-b) imply or presuppose that every cookie did get eaten, and every chair did get brought.

According to Tunstall, time, space, manner and participant are all ways of differentiating subevents from one another. Progressive verbs may take distributively quantifying objects in any context where where subevents are differentiated from one another according to some dimension. A fully distributive event structure ensures that the predicate applies to every single member of the quantified set individually, which is a condition of using of a distributive determiner.

7 Employing *each* vs *every*

The analysis so far predicts that in contexts where *every* is awkward, *each* will be awkward as well. Both are universal, distributive determiners. However, for some speakers at least, sentences like those in (34) are perfectly fine in contexts where the agent affects each object one at a time, on the understanding that the agent in the middle of a partially completed plan in which she intends to affect each one of the objects individually:

(34) a. Charlotte was eating each cookie.
b. Emily was climbing each tree.
c. Anne was bringing each chair.

Not all speakers judge these sentences to be good; however, those who do find that (34c), for example, is fine in a context like (35):

(35) **Context**:
Anne was asked to bring all the chairs into the board room for a meeting. At 1:00, she brought the first chair in, and put it in its place at the head of the table. She continued bringing them one by one and arranging them around the table in their places, and finished at 1:15.

At 1:10, Anne was bringing each chair.

However, all consultants found the following sentences, which include an interrupting *when*-clause, to be ungrammatical or at best very awkward:

(36) a. ??Anne was bringing each chair, when she spontaneously combusted.
b. ??Charlotte was eating each cookie, when she vomited.

This suggests that like the sentences in (32), where modifying adjuncts made the "one by one" reading possible by providing a differentiated event structure, sentences like (35) include a presupposition that the event was in fact completed. This is only a presupposition of the sentence and not an entailment, as is shown by (37). Context contributed by a subsequent sentence may contribute the information that the event did not in fact complete, even though this same information creates awkwardness when contributed by a *when*-clause:

(37) a Charlotte was eating each cookie. She vomited before she could eat them all.
b. *Charlotte ate each cookie. She vomited before she could eat them all.

There is thus a contrast between each and every in the sense that a progressive verb whose object contains *each* may be interpreted in contexts where a single agent brings about multiple sequential subevents. According to Naumann & Pinon's definition of the progressive, sentences where *every* is replaced by *each* are able to accommodate the presupposition that the agent intends to complete the event by affecting every single object in the quantified set individually. This raises the question of why accommodation of this presupposition is possible in the *each* sentences but not the *every* sentences. This is puzzling, as both are universal distributive determiners. Nevertheless, consultants who found (43a-c) acceptable consistently found (1a-c), where *every* is used, to be less good.

A possible reason for the difference between (34a-c) with *each*, and the same sentences with *every*, may be related to the fact that *each* presupposes a contextually determined set (Beghelli & Stowell, 1995), while *every* does not. *Each* refers to unique entities. *Every* does not refer to unique entities: use of *every* asserts only that the predicate applies to every member of a set without referring to unique individuals within the set. Based on this difference between *each* and *every*, a possible explanation of this contrast between *each* and *every* is that when unique entities are referred to, they can be presupposed to be associated with distinct subevents. If this is the case, the distributivity condition will be satisfied: each unique element of the set can be presupposed to be associated with a distinct subevent. This would explain why (34c) is compatible with the context of (44), but becomes incompatible with the addition of a *when*-clause. (36a) seems to simultaneously presuppose that each chair was brought, and assert the opposite, that not all the chairs were brought.

A clue that the acceptability of (34a-c) might be related to the uniqueness presupposition of *each* somehow satisfying the event distributivity requirement comes subtrigging relative clauses. Subtrigging is discussed in Dayal (1998). It restricts the domain of a quantifier, and addition of a subtrigging relative clause improves the sentences from (1)[10]:

(38) a. Charlotte was eating every cookie I gave her.
b. Emily was climbing every tree in the forest.
c. Anne was bringing every chair I told her to.

When the subtrigging relative clause includes a modal verb, sentences that contain *every* in the object phrase are still acceptable. However, sentences that contain *each* in the object phrase are not[11]:

(39) a. Anne was bringing every chair she could find.
b. *Anne was bringing each chair she could find.

Because of the modal, there is no implication that Anne found any chairs at all. If she didn't find any chairs, then she didn't bring any chairs. My hypothesis is that *each* is slightly better than *every* in progressives because the unique individuals in its restrictor set can each be associated with a unique subevent. If this hypothesis is correct, it makes sense that (39b) should be bad. If use of *each*, which presupposes a given set of chairs, also presupposes that these chairs are associated with distinct chair-bringing subevents, the modal means that this second presupposition cannot be accommodated. There is no implication that Anne found any chairs at all, and this conflicts with the use of *each*, which presupposes that there were particular chairs that she brought.

8 Summary

Progressive accomplishments are realized in a non-actual world. Progressive accomplishment sentences that include distributively quantifying objects require special discourse contexts for their interpretation. These special contexts must be able to describe a distributive event, where each

[10] Further research is required to determine how subtrigging improves these sentences. It does not seem to be related to event differentiation, as these sentences are compatible with an interrupting *when*-clause.
[11] This observation is due to Christine Gunlogson (p.c.).

member of the quantified set is associated with its own subevent distinct from all other subevents according to some dimension. Progressives with distributively quantifying objects provide support for Tunstall's analysis of *each* and *every* as requiring event distribution, and for her treatment of their preference for wide scope as the means by which they meet this requirement. In the case of progressives, event distributivity is required in order to ensure that the predicate applies to every individual member of the quantified set. Wide scope of the distributive determiner with respect to the progressive operator creates a fully distributive event in which each member of the restrictor set is associated with a different progressive subevent. This configuration is only compatible with specific discourse contexts; if no such context can be found, the resulting sentence will be odd on pragmatic grounds.

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