An ESPECIALLY interesting paper

Elise Newman*

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1 Introduction

In this paper, I discuss the properties of English *especially*, which I argue is a focus sensitive operator with both *even*-like and degree quantifier-like properties. *Especially*'s interaction with focus and evaluativity make it unlike other intensifiers and evaluative adverbs that it has been compared to: while other degree adverbs have no obligatory evaluative inferences or focus sensitivity, *especially* has both. *Especially* is also unusual in that it introduces evaluative inferences in the alternatives, much like Hebrew *BIXLAL* (Greenberg 2018). I follow Greenberg in attributing this behavior to the presence of an *even*-like particle in *especially*'s meaning. More specifically, I propose a decompositional analysis of *especially* as a version of *even more*$_F$ to account for its dual behavior as a focus particle and a degree modifier.

Section 2 will outline *especially*'s properties and meaning, including discussion of its sensitivity to focus and interaction with evaluative inferences. Section 3 introduces the decompositional analysis. Section 4 discusses predictions of the analysis for *especially*'s interaction with negation and questions. Section 5 discusses broader implications of this theory for Greenberg's analysis and future study of similar particles.

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2 Properties of *especially*

Especially has been analyzed as an intensive like *really* (Beaver&Clark 2008), and an evaluative adverb like *surprisingly* (Nouwen 2011). However, *especially* is unlike *really/surprisingly* in a number of ways. First, *especially* is intonationally marked in a way that *really/surprisingly* are not. This marking typically appears as accent on the word *especially* followed by a drop in pitch on the predicate. By contrast, *really/surprisingly* have no such accent (obligatorily), nor are they necessarily followed by an intonational break between them and the predicate.

(1) a. Wallace is really proud of Gromit.
b. Wallace is espécially proud of Gromit.

An additional difference between *especially* and other adverbs is that *especially* has an additive and evaluative inference, which I will later propose to be presuppositional. Furthermore, like the additive particles *even* and *too*, *especially*'s inferences are sensitive to the presence of a focused element. To avoid confusion, focus-marked constituents will be represented by the subscript F, while the aforementioned intonational marking on *especially* will be represented as ESPECIALLY in the examples (in positive contexts- negative contexts will be discussed in section 4).

(2) a. Gromit$_F$ is ESPECIALLY proud of Wallace.
Additive/Evaluative Inference: There are other people who are proud of Wallace.
Meaning $\approx$ Gromit is proud of Wallace to a noteworthy degree compared to the other proud people.
b. Gromit is ESPECIALLY proud of Wallace$_F$.
Additive/Evaluative Inference: There are other people that Gromit is proud of.
Meaning $\approx$ Gromit is proud of Wallace to a noteworthy degree compared to his pride in other people.

Adverbs like *really/surprisingly* can optionally occur with focus: they can either be used out-of-the-blue (unlike *especially*) or within a rich context where there are clear focus alternatives. In either case, they do not have obligatory additive or evaluative inferences as *especially* does.

(3) Out-of-the-blue: Tell me something about Wallace...
a. Wallace is really/surprisingly tall.
b. #Wallace is especially tall./#Wallace$_F$ is ESPECIALLY tall.

(4) Gromit is really/surprisingly proud of Wallace$_F$.
No additive/evaluative Inference: Gromit might not be proud of the other people in the context.

For *especially*, focus sensitivity, evaluativity and additivity seem intertwined. In the following sections, we will examine these different properties separately to determine how they might be related. Throughout this paper, F-marking will be used to identify intended focus associates of focus-sensitive particles. Other sources of focus marking, e.g. from being discourse new, etc. should be assumed to be either absent from or irrelevant to the examples given.

2.1 Evaluativity

By "evaluative inference", I mean an inference that places the prejacent degree property above some contextual standard on a given scale. For example, evaluativity can be seen in the positive form of an adjective like *tall*, as is shown in (5a). In (5a), Wallace is not inferred to have just *some* degree of height, but rather one that is above average. In (5b) by contrast, a degree modifier is inserted that specifies precisely how tall Wallace is with no evaluative inference, i.e. there is no reference to a contextual standard.

(5) a. Wallace is tall.
- Wallace is tall to a greater degree than some contextual standard.

b. Wallace is 5'5" tall.
- Speaker can be agnostic about whether 5'5" is above or below standard.

The positive form is semantically represented through a context-sensitive operator called *pos* (Bartsch & Vennemann 1972, Cresswell 1977, among others). Assuming that a gradable predicate is of type <e,dt>, if there is no other degree modifier to saturate the degree argument, *pos* is inserted with the following interpretation. In the presence of an overt degree modifier as in (5b), the degree argument is saturated and thus blocks the insertion of *pos*.

(6) Wallace is tall.

a. Wallace is *pos* C tall.

b. $pos : \lambda C.\lambda G.\lambda x.\exists d G(x,d) \wedge d \geq standard(C,G)$

c. $\exists d$. tall(Wallace,d) $\wedge$ $d \geq$ standard(C,tall)

In the absence of *pos* or any other degree modification, the degree argument could in principle be saturated by plain existential closure at vP. However, assuming that this default existential closure at the edge of the verb phrase is very plain (unlike *pos*, whose existential closure includes reference to a particular domain), that would yield trivial meanings such as *Wallace has* some *degree of height*, which is a logical necessity. The contrast in (5a,b) and the lack of ambiguity in (5a) is thus explained by a need for some degree quantification beyond plain existential closure, which can be satisfied by an overt degree modifier or *pos*.

Most other degree sensitive operators fit into this picture. Degree quantifiers like the comparative and the superlative do not have an evaluative inference because they relate the degree properties of entities in the context to each other, and not to a standard.

(7) a. Wallace is taller than Gromit.
- Wallace and Gromit could be anywhere in relation to a standard height.

b. Wallace is the tallest in the room.
- The room could be full of munchkins or giants.

Other degree-sensitive adverbs like *really/surprisingly* often imply the positive form but don't actually entail it, and thus do not have obligatory evaluative inferences either (Katz 2005, Nouwen 2011). For example, they support contexts in which the positive form is negated (8b). Therefore whenever there appears to be evaluative inference, it must be derived pragmatically and not through the presence of a *pos* operator.

(8) a. Wallace is really/surprisingly tall.
- The degree to which Wallace is tall is significant/surprising, Wallace is likely above standard in height.

b. Although he is quite short, Wallace is really/surprisingly tall given his background.
- Wallace is not above standard in height.

We might wonder how expressions like *given his background* interact with expressions like *surprisingly* in these cases. Nouwen (2011) provides the following lexical entry for *surprisingly*, which includes a modal notion of surprise. In prose, to be *surprisingly tall* it must be surprising that one is as tall as they are, which may depend on world knowledge about that person and their background. In this way, expressions like *given his background* are assumed to license the element of surprise without necessarily interacting with the contextual standard for height. Hence, one can be short and also surprisingly tall.

(9) $[\![\text{surprisingly}]\!] = \lambda A.\lambda d.\lambda x.\lambda w.A(d,x)(w)\&\ \text{surprising}_w(A(d,x))$

The explanation for the contrast between (5a,b), on these assumptions, straightforwardly extends to the degree-sensitive particles discussed so far: they should all appear in complementary distribution with *pos* because they saturate the degree argument in the predicate. However, attempting to analyze *especially* like *surprisingly* reveals an immediate problem. *Especially* appears to always have an evaluative inference: it does not support contexts in which the positive form is negated, even when the prejacent degree property satisfies some modal notion of specialness.

(10) If *especially* were like *surprisingly*: $[\![\text{especially}]\!] = \lambda A.\lambda d.\lambda x.\lambda w.A(d,x)(w)\&\ \text{special}_w(A(d,x))$

(11) a. Wallace$_F$ is ESPECIALLY tall.
- Wallace is above standard in height.

b. #Although he is quite short, Wallace$_F$ is ESPECIALLY tall given his background.

Especially, however, behaves otherwise like a degree modifier because it is restricted to gradable contexts where an evaluative inference is available. These contexts include gradable adjectives and verbs, as well as higher elements such as modals and conditionals.

(12) Gradable verbs and modals

a. Gromit ESPECIALLY likes cheese$_F$.
≈ Gromit likes cheese even more than he likes other foods.

b. Wallace should ESPECIALLY go to the party$_F$.
≈ Wallace has an even higher degree of obligation to go to the party than to the other events.

(13) */#Gromit$_F$ ESPECIALLY went to the party.

(14) Conditionals

a. Don't give Gromit oranges, ESPECIALLY [if he is allergic to citrus]$_F$.
≈ It is even more important to follow my order if Gromit is allergic to citrus than under any other circumstance.

b. I'd be happy to come to your party, ESPECIALLY [if Wallace will be there]$_F$.
≈ What I said has an even higher probability of being true if Wallace will be there than under any other circumstance.

The evaluative inference in *especially* does not just appear in isolation, however, but interacts with focus. Both the prejacent and the focus alternatives have an evaluative inference, which resembles additivity. Focus sensitivity will be discussed in isolation in section 2.3.

2.2 Additivity

While all focus sensitive particles refer to a set of alternatives, they differ in whether alternative propositions need to be true in the actual world. Those particles that demand true alternatives are called *additive* particles. The canonical additive particles are *too/either* and *even*. *Only*, by contrast, does not have an additive inference.

(15) Wallace only likes cheese$_F$.
   a. Alternative propositions: Wallace likes carrots, Wallace likes bread...
   b. No additive inference: Alternative propositions are all false in the actual world.

(16) Wallace likes cheese$_F$, too.
   a. Alternative propositions: Wallace likes carrots, Wallace likes bread...
   b. Additive inference: At least one alternative proposition must be true in the actual world.

Adverbs like *really/surprisingly* don't have an additive inference, even when we introduce focus into the proposition, and thus pattern with *only*.

(17) Wallace should really go to the party$_F$.
   a. Alternative propositions: Wallace should go to the concert, Wallace should go to the play...
   b. No additive inference: Wallace should go to the party and not necessarily anywhere else.

(18) Wallace surprisingly fed Gromit Nutrapup$_F$.
   a. Alternative propositions: Wallace fed Gromit bagels, Wallace fed Gromit spinach...
   b. No additive inference: Alternative propositions *would have been* less surprising.

By contrast, *especially* looks more like an additive particle. As is true for *even*, some of the English sentences describing possible focus alternatives in (19) need to be true (previously described as an evaluative inference in the alternatives).

(19) Wallace should ESPECIALLY go to the party$_F$.
   a. Alternative propositions: Wallace should go to the concert, Wallace should go to the play...
   b. Additive inference: Wallace should go to some other events as well, but more importantly to the party.

(20) Wallace even fed Gromit Nutrapup$_F$.
   a. Alternative propositions: Wallace fed Gromit bagels, Wallace fed Gromit spinach...
   b. Additive inference: Wallace fed Gromit something else, and that other food was less surprising.

This property of *especially* is quite robust. If the context fails to provide alternatives with an evaluative inference, the result is infelicity.

(21) *Especially* needs some tall alternatives
   a. Although everyone here is quite short, Wallace$_F$ is actually really/surprisingly tall in comparison.
   b. #Although everyone here is quite short, Wallace$_F$ is actually ESPECIALLY tall in comparison.

(22) Context: it has been very hot lately, in the 90's every day this week, but...
   a. It will be really/surprisingly cold on Wednesday.
   b. #It will be ESPECIALLY cold on Wednesday$_F$.

A theory of this additive property could potentially help solve the mystery of how the prejacent comes to have an evaluative inference, despite the fact that we would expect *especially* to be in complementary distribution with *pos*. If *especially*'s meaning is something like *more than relevant alternatives to a noteworthy degree*, and all of the alternatives are above standard on the relevant scale, the prejacent would inherit evaluativity from the alternatives without *pos* having to be present in the prejacent.

However, a good theory of this additive property is elusive for a few reasons. First, assuming the LF of each alternative is based on the prejacent LF, the alternatives should not contain a *pos* morpheme if the prejacent doesn't. In other words, the English sentences in (19a) are not representative of the LF's we would actually expect unless a *pos* morpheme were present in the prejacent. The computation in (24) shows the expected result for an analysis of *especially* as a degree quantifier with an additive presupposition. The presupposition is trivially satisfied by any set of alternatives because *pos* is never introduced.

(23) *Especially* as a version of additive *surprisingly*: $[\![\text{especially}]\!]^C(A, d, x, w)$ is defined iff
   a. $\exists q \neq p \in C$ s.t. $\exists w.\exists d.q(w)(d) = 1$ (where $p = A(d)(x)(w)$)
   b. If defined, $[\![\text{especially}]\!](A, d, x, w) = 1$ iff $\exists d A(d, x)(w) = 1$& $\text{special}_w(A(d, x)) = 1$

(24) Prejacent LF: [especially C [λd. Wallace$_F$ d-tall]]
   a. Alternatives: $\lambda w.\lambda d$. Wallace is d-tall in w; $\lambda w.\lambda d$. Gromit is d-tall in w; $\lambda w.\lambda d$. Wendy is d-tall in w...
   b. Additive presupposition: $\exists q \neq p \in C$ s.t. $\exists w.\exists d.q(w)(d) = 1$.
   $\rightarrow$ Satisfied for any alternative: e.g. for $q = \lambda w.\lambda d$. Gromit is d-tall in w, [$\exists w.\exists d$. Gromit is d-tall in w] is always true

While the English sentences in (19a) are interpreted with *pos* presumably for pragmatic reasons, it is not clear that such a pragmatic mechanism could be present in (24). First of all, the alternatives themselves are degree properties, not propositions, so they cannot be true, false, informative, etc. The additive presupposition comes with existential closure over the remaining unsaturated arguments in order to make these degree properties propositional, but to get the evaluative inference, we would have to stipulate that it comes with *pos* instead of the plain existential closure inherent to the presupposition. That would be a fairly sophisticated pragmatic adjustment, which would make *especially*'s additive inference unlike those of other additive particles.

Likewise, stipulating the presence of *pos* in the prejacent (and therefore in the alternatives) would make *especially* unlike all of the other degree quantifiers we have seen, and make its selectional properties unexpected (since *pos* saturates the degree argument). In the absence of a stipulation that *pos* be a part of the prejacent somehow, it therefore seems that *especially*'s additivity and evaluativity has to come about through some other mechanism. We now investigate the properties of *especially*'s sensitivity to focus, where we will see that *especially* in fact doesn't behave like canonical additive particles.

2.3 Focus sensitivity

As we saw in (2), *especially*'s interpretation is dependent on a focused element in the clause, making it unlike *really/surprisingly*. However, focus-sensitivity is known to display different properties in different types of particles. In this section, we will see that *especially*'s focus properties are actually different than the other additive particles. While the additive particles associate with focus conventionally, *especially* appears to interact with focus more indirectly (often called *accidental* association), thus more closely resembling the superlative.

Beaver & Clark (2003) discuss indirect/accidental association with focus vs. conventional focus particles. They focus primarily on two focus sensitive particles *always* and *only*. Both particles have been argued to contain universal quantification and to restrict their domains of quantification through the choice of a focused element, however they argue that these particles do so through different means.

In (25) and (26), the (a) and (b) examples differ in the choice of a focus associate and therefore differ in interpretation. In each case, the choice of focus associate determines the domain of quantification (which can be over individuals or events, depending on one's analysis of these particles; examples and definitions taken from Beaver and Clark 2003, p.325, examples 1-2).

(25) a. Sandy always feeds Fido$_F$ Nutrapup.
b. Sandy always feeds Fido Nutrapup$_F$.

(26) a. Sandy only feeds Fido$_F$ Nutrapup.
b. Sandy only feeds Fido Nutrapup$_F$.

(27) Focus on Fido
a. $\forall x$ feed(Sandy, x, Nutrapup) $\rightarrow x =$ Fido
Paraphrase: Everything Sandy feeds Nutrapup to is Fido.
b. $\forall e$(feeding(e)$\wedge$ AGENT(e) = Sandy $\wedge$ THEME(e) = Nutrapup) $\rightarrow$ GOAL(e) = Fido
Paraphrase: Every event of Sandy feeding Nutrapup to some recipient is one of doing so to Fido.

(28) Focus on Nutrapup
a. $\forall x$ feed(Sandy, Fido, x) $\rightarrow x =$ Nutrapup
Paraphrase: Everything Sandy feeds to Fido is Nutrapup.
b. $\forall e$(feeding(e)$\wedge$ AGENT(e) = Sandy $\wedge$ THEME(e) = Nutrapup) $\rightarrow$ GOAL(e) = Fido
Paraphrase: Every event of Sandy feeding Fido is one of doing so with Nutrapup.

However, Beaver and Clark show that while both *always* and *only* can be sensitive to the presence of focus, *always* doesn't require an overt focused element while *only* does. They

argue that *always* has a domain sensitive interpretation, which can lean on the presence of focus to help a listener determine the relevant domain. However, the relevant domain can be pragmatically accommodated by the listener whether or not there is an overt focus associate and whether or not a focused element is congruent with the question under discussion. To clarify the difference, they term two types of readings available to *always*, the focus association reading, and the non-focus association reading. Only the focus association reading is available to *only*.

They offer several strategies for detecting the different sensitivity to focus in these particles, of which I will discuss three: 1) out-of-the-blue contexts, 2) association with prosodically weak elements, 3) association with traces.

In out-of-the-blue contexts, *always* is felicitous but *only* is not. Cohen (1999) observed that this is because *always* has access to a reading in which a presupposition in the clause can restrict the domain of quantification rather than a focused element (non-focus association reading). *Only*'s domain, however, is always restricted by the focused element and its alternatives (focus association reading). *Only* is therefore felicitous in scenarios that answer *what/who* questions, but not out of the blue.

(29) Tell me something about Mary. (Beaver & Clark 2003, p.335, examples 27-28)

a. Mary always managed to complete her exams$_F$.
Domain restricted to times when Mary had exams: *Whenever Mary took exams, she completed them.*

b. # Mary only managed to complete her exams$_F$.
Domain restricted to things that Mary completed: *What Mary completed was an exam and nothing else.*

The second test pertains to weak elements. Reduced pronouns cannot be focused elements (Zwicky 1982). However, *always* can appear to "focus associate" with a reduced pronoun while *only* cannot. We show this by creating a context in which the domain of quantification should include a weak pronoun and its alternatives, despite the fact that overt focus cannot occur. We see that *always* is felicitous in this context but *only* is not. This is because *always* does not require focus for a listener to determine a sensible domain. However, *only* seems to have a stricter requirement for an overt focus associate.

Context (Beaver & Clark 2003, p.343, examples 43-44): You had many discussions with Sandy, but what I want to know is the extent to which you talked about Fred. Of all the times you talked with Sandy, how often was Fred the person you talked about?

(30) a. I always$_F$ discussed'im with Sandy.

b. #I only$_F$ discussed'im with Sandy.

Beaver and Clark use focus marking on *always* to indicate that everything else in the clause is either backgrounded or incapable of begin focus-marked, so *always* receives nuclear stress as the only new element. Given this possibility for *always*, one might have expected similar stress to be possible on *only*, with no other stress present in the clause. However, this is apparently not the case: *only* requires focus marking on the reduced pronoun, which cannot host it.

Turning now to association with traces, it is assumed that a focus sensitive operator can only associate with a focused element within its scope. So if a focused element moves out of the scope of such an operator, for focus to be interpreted on that element, its trace must be

the relevant focus associate for that operator. Erlewine (2014) has shown that *only* cannot associate with A- or Ā-traces, while *even* can associate with A-traces. We will now see that *always* can "associate" with Ā-traces, which is further evidence that *always* supports non-focus association readings.

Context (Beaver & Clark 2003, p.345, examples 47-48): I have two roommates, Kim and Sandy. I always stock my roommates' fishtanks. I stock Sandy's fishtank with goldfish and nothing else. I stock Kim's fishtank with goldfish and clownfish.

(31) Kim's is the tank I always stock with clownfish. (True)
   a. I stock Kim's and no other tank with clownfish. (True)
   b. I stock Kim's tank with clownfish and nothing else. (False)

(32) Kim's is the tank I only stock with clownfish. (False)
   a. *I stock Kim's and no other tank with clownfish. (True)
   b. I stock Kim's tank with clownfish and nothing else. (False)

The first paraphrase in each example describes a situation in which the trace of *tank* is the relevant focus associate for *always/only* (i.e. we are concerned about which tank has clownfish). The second paraphrase describes a situation in which *clownfish* is the focus associate (i.e. which fish is in the tank). The context only supports the first reading, which is available to *always*, but not to *only*, showing that *always* can "associate" with Ā-traces while *only* cannot.

Though we saw at the beginning of section 2 that *especially* resists out-of-the-blue contexts, with respect to the other tests, it behaves much more like *always* than like *only* or *even*. The following examples will compare *especially* to *even*.

Context: Wallace has a tendency to be proud of people but I want to know if he is proud of Gromit too.

(33) a. Wallace is ESPECIALLY proud of'im.
   b. #Wallace is even$_F$ proud of'im.

Similarly in relative clauses, *especially* can appear to focus associate with the Ā-trace of *the relative* while *even* cannot.

(34) a. The relative$_F$ that Gromit is ESPECIALLY/ALWAYS proud of t is Wallace.
   b. #The relative$_F$ that Gromit is only/even proud of t is Wallace.

Especially's similarity to *always* is in line with other focus-sensitive degree quantifiers like the superlative. The superlative has what are called absolute vs. comparative readings. Comparative readings are contextually determined, and can be disambiguated by focus (Heim 1995).

(35) a. John climbed the highest mountain.
   Absolute reading: John climbed Mt. Everest.
   Comparative reading: John climbed a higher mountain than anyone else in the context.

We see that the superlative also behaves like *always* in that it can associate with traces and weak elements.

(36) a. I discussed'im with Sandy the most$_F$.

b. The relative$_F$ that Gromit is proudest of t is Wallace.

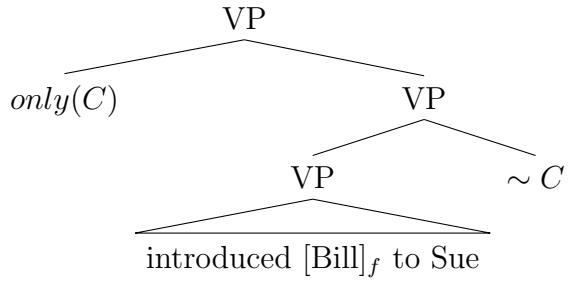
To summarize, with the exception of out-of-the-blue contexts, *especially* looks like a particle that accidentally associates with focus, unlike *even*. Given that *especially* otherwise behaves syntactically as a degree quantifier, it is possibly expected that it should be like the superlative in this respect. Being degree sensitive operators, both need to be interpreted with respect to some comparison class and focus could be instrumental though not necessary in determining that class. However, *especially*'s evaluativity, resistance to out-of-the-blue contexts, and resemblance to an additive particle make it seem more like *even*.

3 Analysis

To reconcile these different properties, I propose a decompositional analysis of *especially* as a particle containing both *even* and a version of the comparative. The comparative component of *especially* governs its syntactic distribution, asserted content, and behavior with focus. The *even* component contributes a presupposition that further restricts the choice of comparison class, which results in the observed additive/evaluative inference (Greenberg 2018).

I will assume the framework of Alternative Semantics (Rooth 1985, 1992). In this framework, focus sensitive operators (both accidental and conventional alike) come with a domain variable that can be constrained through the "squiggle" operator. Focus contributes to the presupposition introduced by the squiggle operator.

(37) Where φ is a syntactic phrase and C is a syntactically covert semantic variable, $\varphi \sim$ C introduces the presupposition that C is a subset of $[\varphi]^f$ containing $[\varphi]^o$ and at least one another element.
-(Rooth 1996a: (20))



The proposed decompositional analysis of *especially* is based on the observation that *even more*$_F$ has an additive and evaluative inference as well. Given that the comparative doesn't have an evaluative inference on its own, it must come from *even*.

(38) Gromit is even more$_F$ proud of Wallace than Wendy is.
Additive/Evaluative inference: Wendy is proud of Wallace.

(39) Context: It will be very pleasant this week.
   a. However, next Monday will be surprisingly intolerable.
   b. #However, next Monday will be even more$_F$ intolerable.

We have discussed *even* as an additive particle, but in addition to an additive inference, *even* also has a scalar presupposition. As described by Horn 1969, Kartunnen & Peters 1979, and many others, *even* presupposes that the prejacent is less likely than its alternatives. Whether this scalar presupposition is universal or existential has been debated, but I will assume the K&P 1979 version with the universal presupposition. This assumption will be revisited in section 4.

(40) $[\![\textbf{even}]\!]^{g,c}(C, p, w)$ is defined only if
Scalar presupposition: $\forall q \in C[q \neq p \rightarrow p <_{likely} q] \wedge$
Additive presupposition: $\exists q \in C[q \neq p \wedge q(w) = 1]$
If defined, $[\![\textbf{even}]\!]^{g,c}(C, p, w) = 1$ iff $p(w) = 1$

We now examine *even*'s presuppositions when its focus associate is *more*. I assume that the only viable lexical alternatives to *more* are *at least as much* and *less*. We will see that *less* is the crucial alternative that gives an evaluative inference. The below alternatives are written in prose for illustrative purposes, but the computation refers to LF's, not prose.

(41) Alternatives for (38)
   a. Gromit is more proud of Wallace than Wendy is.
   b. Gromit is at least as proud of Wallace as Wendy is.
   c. Gromit is less proud of Wallace than Wendy is.

(42) Additive presupposition
   a. One of these alternatives is true, namely: Gromit is at least as proud of Wallace as Wendy is. (always true because it is entailed by the prejacent)

(43) Scalar presuppositions
   a. Gromit is more proud of Wallace than Wendy is. $<_{likely}$ Gromit is at least as proud of Wallace as Wendy is. (trivially satisfied)
   b. Gromit is more proud of Wallace than Wendy is. $<_{likely}$ Gromit is less proud of Wallace than Wendy is. (only true if Wendy's pride in Wallace is higher than average)

Since *more* entails *at least as much*, the likelihood relation between them is logically fixed as the one stated in (43a), so this presupposition has no informative contribution.

The presupposition in (43b), however, has a non-trivial contribution. If Wendy were not at all proud of Wallace (i.e. far below standard), (43b) is intuitively not licensed because we expect the average to be more densely populated than the extrema (in the absence of particular expectations about Gromit). In other words, to be lower on a scale than someone who is already far below average is less likely than being closer to average. Similarly if Wendy was proud of Wallace to an average degree, it would be equally likely for someone to be more or less proud than her.

For (43b) to be licensed, we therefore need a context in which Wendy is proud of Wallace to a degree that is *above* average. In accommodating the scalar presupposition in (43b), we therefore also accommodate an evaluative inference.

The paraphrase of *especially* as *even more*$_F$ therefore captures *especially*'s additive/evaluative inference, but it doesn't quite capture *especially*'s use and meaning. I will argue that *especially*'s comparative component is lexicalized with a particular comparative argument that gives *especially* its sense of standout-ness. I will call the comparative argument the *characteristic range* (henceforth CR) of degree properties in the context. *Especially* asserts that the prejacent exceeds this range, and is thus standout in the context. Altogether, *especially* is decomposed into *even more*$_F$ *than CR*.

The CR will be discussed in detail shortly, but let us first see the mechanics of the proposal. The idea is that two of *especially*'s components are focus sensitive: *even* and the CR. *Even* is conventionally focus sensitive and focus associates with *especially*'s comparative component, resulting in the additive/evaluative inference discussed above, and also yielding the intonational marking on *especially*, which results from focus marking internal to it on *more* (*even more*$_F$ $\rightarrow$ ESPECIALLY). This proposal is reminiscent of Greenberg (2018), in which *even* is argued

to be able to focus associate with unpronounced elements, requiring focus to be realized on a separate overt element.

The CR is a context sensitive notion and is therefore also focus sensitive. As part of a comparative operator, its sensitivity to focus is indirect, like the superlative. However, if there *is* a focused element in the scope of *especially*, it will fall within the domain of the CR and *not* within the domain of *even*. *Even* is therefore restricted to focus associating with the comparative and not with anything else in the clause[1].

Lastly, I assume a movement theory of degree quantifiers (Heim 1995), in which a degree quantifier such as the comparative moves from a VP internal position, leaving a trace of type d. *Especially* therefore moves to a position above the degree property, where it can focus associate with anything in the VP, including the subject. *Even* must operate over a proposition, so I assume that *even* moves higher than *especially*, giving the following LF.

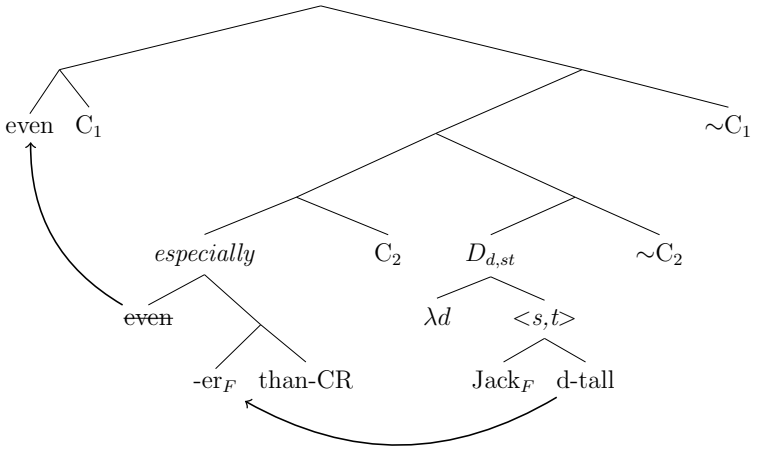


Figure 1: Derivation: *especially* scopes over degree property, *even* moves above proposition.

An approximated meaning of *especially*, as though it were a single lexical item, is in (44). The evaluativity in the alternatives is spelled out as part of *even*'s presuppositions: the CR has to be high on the scale for the scalar presupposition to be satisfied. The only way in which this approximation differs from the full result is that the scalar presupposition should contain another conjunct, which could be sensitive to particular world knowledge about Gromit. This will be discussed at the end of this section.

(44) $[\![\text{especially C}]\!] = \lambda f_{d,st}.\lambda w.\exists d[f(d)^w = 1 \wedge d{>}max(\text{characteristic range in C})]$
defined iff...
   a. Additive: $card(C) \geq 3 \wedge \exists d$ s.t. $[f(d)^w = 1 \wedge d \geq max(\text{CR}_C)]\wedge$
   b. Evaluative:$[(d{>}max(\text{CR}_C)){<}_{likely}(d \geq max(\text{CR}_C))\wedge(d{>}max(\text{CR}_C)){<}_{likely}(d{<}max(\text{CR}_C))]$

Turning now to the proposed comparative argument, namely the CR, we will see that this notion is necessary to capture both *especially*'s stand-out meaning as well as its minimal size requirement for a comparison class (like the superlative). First, we see that in a context where Wallace is within a given range of heights, *even more*$_F$ is licensed but *especially* sounds odd. *Especially* requires the prejacent to stand out from the group.

[1]I assume that the CR has no lexical alternatives and is not a viable focus associate for *even* either.

(45) In this class, we have some short people, some tall people, and some very tall people. Which category does Wallace belong to?

a. I'm not sure, he's pretty tall - even taller than one of the very tall people, so he should be considered very tall.

b. #Wallace$_F$ is ESPECIALLY tall, which puts him in the range of the very tall people.

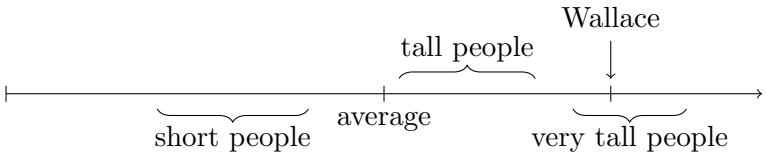


Figure 2: Intended distribution of heights in the context for (45)

Especially also has superlative-like requirements for its comparison class. Just as the superlative is only licensed when there are more than 2 people in the context, *especially* needs a comparison class with at least two additional members.

Context 1: Planet Z is a young planet that has experienced one ice age to date. The ice age was quite cold: the planet froze nearly to the core. Planet Z is projected to have a second ice age in a few hundred years.

(46) a. #The second$_F$ ice age is projected to be ESPECIALLY cold.

b. The second ice age is projected to be even colder$_F$.

Adding an additional ice age to the context improves the sentence. Context 2: Planet Z is a middle-aged planet that has experienced two ice ages to date. The first two ice ages were quite cold: the planet froze nearly to the core both times. Planet Z is projected to have a third ice age in a few hundred years.

(47) The third$_F$ ice age is projected to be ESPECIALLY cold.

In order for the prejacent to be standout, *especially*'s comparison class needs to have a critical mass that defines the norm. A single alternative cannot define a standard by itself, but additional alternatives can suggest a distribution. This is why I proposed to call *especially*'s comparative argument the *characteristic* range of degree properties in the context. We need enough members in the context to be able to determine a range of degrees that characterizes our expectations about group membership. Without a notion of what it means to be *in* the group, it is impossible to define what it means to stand *out* from the group.

For the scalar presupposition to be satisfied, the average of the CR must exceed the general standard. So not everyone in the context needs to be tall, but a critical number of them must be.

An alternative hypothesis would have been to characterize *especially* as a version of the superlative. Instead of comparing the prejacent to a CR, we could have simply compared the prejacent to everyone in C. However, this analysis would fail to capture a) *especially*'s requirement for standout-ness, and b) its domain flexibility compared to the superlative.

The CR is not bounded strictly by the maximum and minimum heights given, but rather trails off on either end and is centered around the average. Someone could therefore exceed the

given list of degrees but still be within the CR. If *especially*'s comparison class were a list of heights in C instead of a CR, we would therefore not expect the following contrast.

(48) Context: The average height on the basketball team is 5'11", and the players' heights range from 5'9 to 6'. Wallace is 6' tall.

a. He is the tallest.

b. #He is ESPECIALLY tall.

Especially further differs from the superlative in not requiring the prejacent to be the absolute tallest of every person in the context. We need only be able to identify a salient group that the prejacent outlies. In this sense, *especially* is more flexible in choosing a domain than the superlative is. *Especially* can discard outliers when choosing a CR, but the superlative is bound to the given list of degree properties.

Context: Professor is handing back exams and publicly discussing the results. Not everyone in the class is present, including those who performed the best on the exam, but most people present did reasonably well. He turns to someone who did very well and says...

(49) Wendy, you did ESPECIALLY well.
- Perhaps Wendy has done the best of those mentioned so far, or the best of those present in class at the moment, or maybe she did much better than she usually does

(50) #Wendy, you did the best.
- Can only mean she did best out of everyone in the class (which is false in this context), in the absence of an overt restrictor (e.g. *Mary, you did the best out of those mentioned so far*).

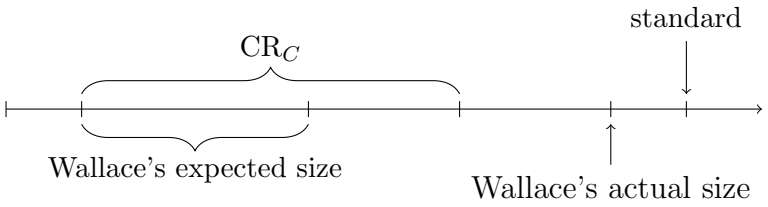
Lastly, recall that the lexical entry that I proposed for *especially* was an approximation used to illustrate the proposal. In fact, since the analysis is decompositional with the *even* component scoping above a proposition that contains the comparative component, we would expect the scalar presupposition to be more complicated, containing the first conjunct in *especially*'s asserted content as well.

(51) Scalar presupposition: $\exists d$ s.t. $[(f(d)^w = 1 \wedge d{>}max(\mathrm{CR}_C)){<_{likely}}(f(d)^w = 1 \wedge d \geq max(\mathrm{CR}_C)) \wedge (f(d)^w = 1 \wedge d{>}max(\mathrm{CR}_C)){<_{likely}}(f(d)^w = 1 \wedge d{<}max(\mathrm{CR}_C))]$

In prose, the likelihood statement now has a slightly different profile, namely *there exists a degree such that it is less likely for Wallace to be tall to that degree and for that degree to exceed the CR than for Wallace to be tall to that degree and for that degree to be less than the CR*. In this sense, if we had particular world knowledge about Wallace and his likely height, that world knowledge could make it possible to satisfy the scalar presupposition even if the CR is not above standard. In this case, we would predict to be able to find uses of *especially* without evaluative inferences in the alternatives. Below is an attempt to create such a context where Wallace exceeds both a CR and our expectations for him, but both the CR and Wallace are below standard on the scale. We see that *especially* is acceptable (though perhaps slightly more marginal), which accords with our prediction.

Context: Wallace is a caterpillar from a very small family. All of his family members before him predictably became small butterflies. Some of his family members are larger than others, but Wallace is from the smallest part of the family so he is expected to become a very small butterfly. After he emerges from his cocoon however, his family discovers that...

(52) Wallace is ESPECIALLY large for his family, he is almost average size for a butterfly!



This result accords with the prediction that the scalar presupposition need not impose constraints on the CR as long as we have independent world knowledge about the prejacent degree property. If Wallace exceeds both the CR and our expectations for him, the CR need not be above average[2].

[2]It is actually tricky to tell if this tested exactly what we wanted, given that the standard size could be contextually shifted as well. If the contextual standard is shifted to Wallace's family's average size, the evaluative inference could in fact still be there. I tried to control for this by continually referring to his family as "small". We saw previously that *especially tall* was ruled out in a context where everyone else was short (i.e. we didn't see a shifted standard), so hopefully the contrast is indicative that evaluativity is not what makes (52) good.

4 Negation

Thus far we have discussed the properties and meaning of *especially* in positive contexts, where we observed an additive and evaluative inference. However these inferences seem to disappear under negation. *Especially* under negation supports out-of-the-blue contexts, showing that there is no additivity or obligatory focus sensitivity. *Especially* also loses its intonational markedness under negation under normal circumstances. Prominence on *especially* under negation can only have contrastive or echo interpretations.

(53) Tell me something about Wallace...
   a. Wallace isn't especially tall. (c.f. #Wallace is especially tall)
   ≈ Wallace's height is not stand-out.
   b. # Wallace isn't even tall.

However, if *especially* scopes above negation, it behaves again like positive *especially*. We see it pronounced as positive *especially* and get an evaluative inference that scopes above negation (i.e. *even more not tall*). Embedding *especially* further below negation is ambiguous between the two behaviors.

(54) Wallace$_F$ ESPECIALLY isn't tall.
   → Wallace is very short.

(55) I don't think that Wallace$_F$ is especially/ESPECIALLY tall.
   a. ...he seemed pretty average to me.
   b. ...he is definitely the tallest in his class but they are all pretty short/but he is only tallest by a quarter inch.

Since positive *especially* has an evaluative inference that the prejacent is above standard (and that the alternatives are above standard), we might have expected negative *especially* to have an anti-evaluative inference, i.e. to place the prejacent below standard (as in (54)). In reality, however, the prejacent could be above or below standard, and there are no requirements on the comparison class either.

(56) Wallace isn't an especially tall 5th grader...
   a. ...but he is probably one of the taller ones.
   b. ...I'd guess he is probably one of the shorter ones.

(57) Context: It will be very hot/temperate/cold this week. But how does next Tuesday look?
   a. Next Tuesday won't be especially hot.
   b. Next Tuesday won't be especially cold.

In other words, exactly those properties that I argued came from *even* seem to disappear under negation: special prosidy on *especially*, the evaluative inference in the alternatives, and the resulting evaluative inference on the prejacent. I will argue that this behavior is predicted by the present decompositional analysis of *especially*, provided we accept that the contribution of *even* to *especially* is cancellable in certain contexts. We observe that *even more*$_F$ is infelicitous under negation.

(58) #Wallace isn't even more$_F$ pleased than Wendy.

The problem with (58) is not that *even more* can't be pronounced under negation. The problem is that *more* is the focus associate of *even*. When the focus associate is *Wendy* as in (59), the sentence is felicitous and has an evaluative inference that scopes above negation.

(59) Wallace isn't even more pleased than Wendy$_F$.
Anti-evaluative inference: Wendy is very displeased.

The contrast between (58) and (59) is predicted on the assumptions outlined so far. Assuming that *even* must move above clausal negation (Karttunen & Peters 1979, Lahiri 1998), we will see that when its focus associate is *more*, its scalar presupposition becomes unsatisfiable. This is because *more* entails one of its alternatives (namely *at least as much as*). It is therefore logically impossible for them to stand in the likelihood relation established by *even* when it scopes above negation. We see this illustrated in the computation for (58) below.

(58) #Wallace isn't even more$_F$ pleased than Wendy.

a. LF: [even C [Wallace is not more$_F$ pleased than Wendy] $\sim C$]

b. C: λw. Wallace is not more pleased than Wendy in w; λw. Wallace is not as pleased as Wendy in w; λw. Wallace is not less pleased than Wendy in w

c. Additive presupposition: At least one of the alternatives is true (e.g. Wallace is not as pleased as Wendy)

d. Scalar presupposition: (λw. **Wallace is not more pleased than Wendy in w;** $<_{likely} \lambda w$. **Wallace is not as pleased as Wendy in w**) $\wedge$(λw. Wallace is not more pleased than Wendy in w $<_{likely} \lambda w$. Wallace is not less pleased than Wendy in w)

The bolded portion of the scalar presupposition is the offending likelihood relation. If a proposition P asymmetrically entails a proposition Q, P is by definition less likely than Q. In (58), the prejacent contains *not more*, which is asymmetrically entailed by one of its alternatives, *not as much as*. For *even*'s scalar presupposition to be satisfied however, *not more* must be less likely than its alternatives. The presupposition is therefore unsatisfiable because one of the alternatives entails the prejacent and must be less likely than it.

However, when the focus associate is instead the complement of *than* rather than the comparative (59), there is no entailment relation between any of the alternatives. The presupposition is therefore satisfiable and the sentence is felicitous.

(59) Wallace isn't even more pleased than Wendy$_F$
Scalar presupposition: It is less likely to not be more pleased than Wendy than to not be more pleased than others $\rightarrow$ Wendy is very displeased.

We have seen that *especially*, analyzed as a version of *even more*$_F$, is expected to be problematic within the scope of negation because its scalar presupposition becomes unsatisfiable. However, when *especially* is pronounced within the scope of negation, we don't actually get infelicity. We apparently just lose the presupposition altogether.

I therefore propose that the *even* component of *especially* is cancellable if it introduces an unsatisfiable presupposition. When the *even* component disappears, negative *especially* just

means *not more than CR*, where the CR can be any coherent range of degree properties in the context (i.e. doesn't need to be high or low on the relevant scale).

In the absence of requirements on the CR, the CR can also be completely general, much like the absolute readings of the superlative. In other words, the relevant comparison class could be a salient group determined by focus, or the general population. Negative *especially* therefore supports out-of-the-blue contexts because the general population is always a salient comparison class. By contrast, the absolute reading was blocked for positive *especially* because the CR of the general population is centered around the standard, but the scalar presupposition required the CR to be above standard.

Especially outside the scope of negation behaves as it does in positive environments because negation is below the comparative. Therefore the entailment relation between the prejacent and the alternatives mirrors that of the positive cases (*more not tall* $\Rightarrow$ *at least as much not tall*). Similarly, further embedding *especially* yields the expected ambiguity: *even* can either remain in the embedded clause where there is no negation and the presupposition is satisfiable, or move above negation in the superordinate clause where it is not.

This proposal raises the puzzle of how and when *even*'s presupposition can be ignored. Overt *even* does not have cancellable presuppositions so we would first have to assume that the ability to cancel a presupposition is reserved for unpronounced *even* only. Additionally, work on NPI's has shown that NPI's might also contain a covert *even*-like component that has not been argued to be cancellable (Lahiri 1998, Crnič 2014, among others). If further investigation reveals this behavior to be unique to *especially*, it could either be evidence against an *even* account of NPI's, or evidence in favor of a weaker version of *even* that appears in *especially* but not NPI's.

In line with the second possibility, Zeevat (2009) argues for the existence of weakly mirative particles, where a mirative particle is one that presupposes that the prejacent is in contrast with a set of contextual expectations. For example, *even* is a mirative particle because it introduces a proposition that is presupposed to be unexpected in the context. Zeevat argues that *only* is also a mirative particle but only weakly so, meaning the likelihood presupposition effectively disappears in certain environments. First looking at evidence of *only*'s mirativity, the examples in (60) show us that *only* is not interpreted vacuously in exhaustive contexts, but rather contributes an additional inference ((60 adapted from Umbach 2005, Zeevat 2009).

(60) Who showed up?
   a. Wendy.
   b. Only Wendy.

The answer in (60a) is already expected to be exhaustive, i.e. to mean that nobody but Wendy showed up (this is the preferred reading assuming a cooperative conversational partner). If *only* simply contributed an exhaustive inference, we would therefore expect to see no contrast in meaning between (60a,b). However, Zeevat argues that this is intuitively not the case. The use of *only* in (60b) seems to convey an expectation that more people should have come, an inference which is absent in (60a). One might therefore conclude that *only* is a mirative particle.

However, there are environments with *only* in which this inference about expectation is absent, particularly in subordinate uses of *only*. For example, (61a) is felicitous despite the fact that it conforms to the expectations in the context.

(61) (Everybody expects Wendy to come and nobody else - adapted from Zeevat (2009), example 6, page 123)

a. If only Wendy comes, we will have enough to eat, but if she brings Preston...

Based on examples like these, Zeevat proposes that *only*'s likelihood presupposition behaves more like a suggestion for the context, which can be abandoned in certain environments. A proposal to this effect could extend to *especially*'s *even* component, which could be weaker than regular *even* if its likelihood presupposition disappears under negation. More work needs to be done to see whether the properties of these contexts systematically relate to the presence or absence of likelihood presuppositions in the way that I proposed for *especially*. I leave this puzzle to future research.

4.1 Questions

We saw that *especially*'s presupposition didn't project in negative environments and explained how this was expected on the analysis. However, one might worry that negation should be taken as evidence that *especially* was mis-analyzed, and that the inferences are not presupposed at all. We see now that this worry is unfounded, *especially*'s presuppositions project normally in questions because *even more*$_F$ has satisfiable presuppositions in this context.

(62) a. Is Wallace$_F$ ESPECIALLY pleased about the match?
- Inference: other people are pleased about the match

b. Is Wallace even more$_F$ pleased about the match than Wendy?
- Inference: Wendy is pleased about the match

We might wonder whether unstressed *especially* is also licensed in questions. At first blush, yes, but upon closer inspection, no. We can only destress *especially* in a question when the predicate is stressed. The reading in this scenario is that *especially* is old information. Nonetheless, *especially*'s meaning is the same as in (62a) with the predicate as the focus associate, it is not the vague meaning from negative *especially*.

(63) Is Wallace especially TALL?
- Meaning ≈ Is Wallace's height a noteworthy attribute compared to his other features?
- Inference ≈ Wallace has some scalar attribute(s) to a positive degree

4.2 Revisiting *even*'s presupposition

This analysis works on the definition of *even* provided, which has a universal scalar presupposition: the prejacent must be the least-likely alternative in the context. Some have argued that *even* actually has an existential presupposition rather than a universal one, namely that the prejacent need only be less likely than *some* other alternative and not all of them.

The choice to represent *even* with a universal presupposition was not entirely innocent so we will now review the effects of this choice on the analysis of *especially* and *even more*$_F$ as well as the motivation for it. We will see that while the choice may not affect the analysis of positive environments, it was crucial for understanding *especially/even more*$_F$ under negation.

Throughout this paper, I have assumed that there are only ever two possible alternatives besides the prejacent under consideration: *less than* and *at least as much as*. A universal theory

of *even* says that the prejacent must be less likely than both of them, while an existential theory only needs to consider one of them. First considering the analysis of positive *especially/even more*$_F$, one of these alternatives was argued to yield a trivial presupposition while the other gave an informative one. This difference in informativity is likely a confounding factor in any attempt to test whether or not *even* has a universal or an existential presupposition.

If we were to assume that *even* had an existential scalar presupposition, it is predicted that one could ignore the informative alternative but still satisfy the presupposition with the other, uninformative one. The resulting presupposition would not give us the desired evaluative inference, and in fact would not contribute any information at all (contrary to our observations). This fact does not rule against an existential scalar presupposition for *even*, however. A cooperative listener would presumably not accept a vacuous interpretation of *even*, and therefore would more likely accommodate the more informative presupposition, which considers the second alternative. As a result, though *even* could technically be satisfied by only considering the uninformative alternative (an undesirable result), pragmatics likely rules out this option independently. The existential theory of *even* is therefore compatible with the present analysis of positive *especially/even more*$_F$.

For negative *especially/even more*$_F$, however, our analysis depended on consideration of both alternatives, and there was no obvious pragmatic principle independently requiring a listener to consider the problematic one. An existential theory of *even* would have allowed the scalar presupposition to ignore the *at least as much as* alternative, which would have predicted ESPECIALLY to be felicitous under negation with an anti-evaluative inference. In the absence of some other requirement on *even*'s domain (i.e. a minimum size requirement), this analysis therefore argues in favor of the universal analysis.

We now investigate some reasons why one might advocate for an existential *even* to determine whether this result is problematic. It is somewhat tricky to investigate this property of *even* because as Kay (1990) points out in a footnote, it is not always clear what the relevant domain should be when evaluating *even*'s scalar presupposition. For example, in (64), there are several possible sets of alternatives to consider. The choice of quantificational force in the presupposition seems to depend on which one we choose.

(64) Even Wallace$_F$ failed the exam.
   a. Wallace is compared to people who took the exam.
   b. Wallace is compared to people who failed the exam.

Intuitively, *Wallace* does not have to be the smartest person in the class in order for (64) to be licensed. There could be people in the class who were less likely to fail than Wallace and passed the exam. Therefore if the set of alternatives under consideration is the set of people who took the exam, *even*'s likelihood presupposition must be existential rather than universal: Wallace is *not* the least likely person amongst the set of alternatives to fail the exam.

(65) This week, the teacher gave a really hard exam. Gromit and Wendy managed to pass it but a lot of people failed. Even Wallace$_F$ failed the exam.

However, if we instead consider just the people who failed the exam, it seems that Wallace indeed has to have been the least likely to fail amongst those explicitly mentioned. If we imagine a context in which Gromit and Wendy also failed the exam, but were less likely to fail than Wallace, *even* becomes odd.

(66) This week, the teacher gave a really hard exam. Gromit and Wendy, the two best students in the class, failed along with many others. #Even Wallace$_F$ failed the exam.

This result is even easier to see when the alternatives are ordered numerically.

(67) Did Wallace read the first six Harry Potter books this summer?
   a. Yes, he even read the seventh$_F$.

(68) Did Gromit read the seventh Harry Potter book?
   a. #Yes, he even read the sixth$_F$.

There is no logical requirement that one read Harry Potter books in order, so having read the seventh book does not strictly entail that one read the sixth book. World knowledge suggests a likelihood ordering between them, however, in which it is more likely to have read the earlier books than the later ones. If *even* has an existential presupposition, it is not immediately clear why (68a) is odd. There exist more likely alternatives in the context (i.e. reading books 1-5) than the prejacent, so the fact that there also exists a less likely alternative (i.e. reading the 7th) shouldn't affect the judgment. Nonetheless, there is a clear contrast between (67a) and (68a).

One way to reconcile *even*'s sensitivity to the choice of domain is to state *even*'s presupposition as follows: there needs to be a salient domain in which the prejacent is the least likely alternative. A listener may therefore flexibly restrict the relevant domain in (65) to only those who failed rather than everyone who took the exam. In (68a), however, restricting the domain to those books that Gromit read necessarily includes an alternative that is less likely than the prejacent, so the presupposition can never be satisfied. A universal presupposition for *even* is therefore compatible with scenarios in which the prejacent is not the least likely alternative in the broadest possible relevant domain. As long as there is a natural subdomain in which the prejacent is least likely, a listener can accommodate it and license *even* in that context.

In the case of *especiallyeven more*$_F$, we do not see a similar sensitivity to domain restriction because there are only two possible alternatives to consider, and they are special alternatives because two of them are logically related[3]. There isn't an obvious way to imagine subdomains that would allow us to ignore either of the two alternatives without running into the aforementioned pragmatic issues. We therefore have to include both alternatives in the domain of evaluation, and universal force requires us to consider both of them in the likelihood presupposition.

[3]In positive contexts, grouping the logically related alternatives (*at least as much* and *more*) to the exclusion of the third would yield a trivial presupposition, so the only viable domain includes all possible alternatives. In negative contexts, we predict the restricted domain with the two logically related alternatives to yield the same behavior for *especially* as the full domain would have. Trying to group the prejacent with the logically unrelated alternative doesn't form a natural group.

5 Greenberg 2018

The fact that *even* can contribute evaluative inferences in gradable contexts has been noted elsewhere, most notably by Greenberg 2018 for Hebrew *BIXLAL*. Greenberg demonstrates that unaccented *bixlal* is an *even*-like particle that can be used in most of the same contexts as English *even*. In gradable contexts, however, we most often find its accented counterpart *BIXLAL*, which has more of an intensifier-like meaning and an evaluative inference both in the prejacent and in any relevant alternatives.

(69) a. dani hu 1.75m ve-ma im yosi?
Danny is 1.75m and-what with Yosi
"Danny is 1.75m tall. And what about Yosi?"

b. hu BIXLAL / MEOD / MAMASH gavoha
he BIXLAL / very / really tall
"He is very / very / really tall." Evaluative inference: Both Danny and Yosi are tall.

Greenberg proposes that accented *BIXLAL* is not actually an intensifier, but rather unaccented *bixlal* (i.e. *even*) when it focus associates with the covert comparison class in the gradable predicate. The fact that its focus associate is unpronounced forces the accent to be pronounced on *bixlal*. Association with the comparison class also results in an evaluative inference that the prejacent is taller than an already tall set of people.

Some of properties of *BIXLAL* are shared by *especially*, so we might be tempted to try and unite them under a single analysis. This section will explore Greenberg's analysis in some detail and conclude, 1) that *BIXLAL* and *especially*, though similar, are different enough that they should not be united under a single analysis, and 2) that Greenberg's analysis requires an assumption that is incompatible with the analysis of *especially* provided in this paper. I will therefore argue that *BIXLAL* should be reanalyzed. I will, however, suggest that *BIXLAL* and *especially* are typologically related. I propose that they fill out a corner of a hypothesis space for *even*-like particles that mirrors the progression of evaluative adverb to degree modifier, along the lines of Nouwen (2011).

While much of the literature cites *afilu* as Hebrew's primary *even*-like word, Greenberg argues that *bixlal* also behaves a lot like *even*. *Bixlal* is used to introduce propositions that are more surprising than what is in the common ground, and is also straightforwardly translatable as *even* in both positive and negative contexts.

(70) a. (context: Danny and Yosi did well at a competition)
dani kibel medalyat kesef, ve-yosi **afilu** / **bixlal** kibel medalyat zahav / #bronza
Danny got medal silver and-Yosi afilu / bixlal got medal gold / bronze
"Danny got a silver medal, and Yosi even got a gold / #bronze medal."

b. Lo rak she-lo ba li le'exol im Danny, **bixlal** lo ba li LIR'OT oto
not only that-not feel-me to eat with Danny, bixlal not feel-me to see him

"Not only do I not feel like eating with Danny, I don't even feel like seeing him."

Accented *bixlal* (henceforth *BIXLAL*), however, has a different meaning and distribution that likens it somewhat to English *especially*[4]. Most notably, it comes with an evaluative inference that others in the context are also above standard on the relevant scale. Example (71) shows that *BIXLAL tall* is only felicitous if the salient alternatives are tall.

(71) a. dani hu rak 1.75m. hu lo gavoha, ve-ma im yosi?
Dani is only 1.75m. he not tall and-what with Yosi?
"Danny is only 1.75m tall. He is not tall. And what about Yosi?"

b. hu #BIXLAL / MEOD / MAMASH gavoha
he BIXLAL / very / really tall
intended: "He is very tall/taller"

One way in which *BIXLAL* differs from *especially* is its interaction with negation. Greenberg shows that *BIXLAL* behaves almost like an NPI under negation, keeping all of its normal properties but giving an opposite of scale interpretation. In this sense, it behaves like *especially* only when *especially* surface scopes above negation. Note that Hebrew differs from English regarding word order possibilities for *afilu/bixlal*, which generally cannot occur between negation and the predicate.

(72) a. hu BIXLAL lo gavoha
He BIXLAL not tall
"He is not tall at all."

b. # hu lo BIXLAL gavoha
he not BIXLAL tall

c. hu lo gavoha BIXLAL
he not tall BIXLAL
"He is not tall at all"

To summarize, Greenberg offers the following paraphrases for *BIXLAL* in both positive and negative contexts. Her wording suggests that *BIXLAL* may also be a version of *even more*, though her analysis doesn't reflect this observation.

BIXLAL in positive context → A: Danny reaches the contextually salient standard of tallness. And what about Yosi? B: He even reaches a higher standard of tallness

BIXLAL in negative context → A: Danny does not reach the contextually salient standard of tallness. And what about Yosi? B: He does not even reach a lower standard of tallness (= he is not tall at all) even > not

The proposal has two components. First, *BIXLAL* is argued to be *bixlal* when it focus associates with a covert comparison class, which gives an evaluative inference in the alternatives

[4] *BIXLAL* has some other meanings too apparently but those seem to be pretty related, at least they aren't stressed in the paper.

(similar to *especially*). Greenberg assumes, as I have throughout this paper, that degree properties without overt modification come with a positive morpheme that introduces a comparison class argument. It is this argument that becomes *bixlal*'s focus associate, as seen in (73), and lends its accent to a nearby overt element, namely *BIXLAL* (unclear why it couldn't have landed on *tall*). Second, the comparative inference that the prejacent exceeds the alternatives on the relevant scale is argued to come about pragmatically.

(73) Yosi is *bixlal pos* $[C]_F$ tall. → Yosi is *BIXLAL* tall.

This proposal is a departure from the classical way of deriving focus alternatives, where focus associates are supposed to be overt material that can bear prosodic prominence. As we saw in section 2.3, the inability of weak elements such as reduced pronouns to be focused explained differences between different types of focus particles. On Greenberg's account, however, even null elements are eligible for focus, so the facts that we saw about reduced pronouns would have to be reanalyzed[5].

Granting for the moment that such a reconciliation is possible, let us see how her proposal accounts for *BIXLAL*. Because *BIXLAL* is argued to be *even*, it contributes no asserted content, just an additive and scalar presupposition. Greenberg writes *even*'s scalar presupposition in terms of contextual entailment rather than likelihood, though the effect is still the same. In particular, it contributes a presupposition that the prejacent contextually entails its alternatives, which means that the prejacent must be less likely than its alternatives in the context.

(74) Yosi is *bixlal pos* C_F tall.

a. *pos* : $\lambda C.\lambda G.\lambda x.\ \exists d G(x,d) \wedge d \geq standard(C,G)$

b. Scalar presupposition: For all contextually relevant comparison classes C′, distinct from C:
Yosi is *pos* *C* tall $>_C$ Yosi is *pos* *C′* tall
$= \exists d$ tall(Yosi,d) $\wedge d \geq$ standard(C, tall) $>_C$ d tall(Yosi,d)$\wedge d \geq$ standard(C′,tall).

c. Assertion: $\exists d\ tall(Yosi,d) \wedge d \geq standard(C,tall)$

Similar to the logic we saw for *especially*, for it to be less likely to be tall by some standard$_C$ than by some other, contextually relevant standard$_{C'}$, standard$_C$ must be higher than standard$_{C'}$. This is where, Greenberg proposes, the evaluative inference in the alternatives comes from. The result is that, to be *BIXLAL tall*, one must be tall by a tall standard.

Finally, the interpretation that Yosi is taller than relevant alternative individuals is argued to be a scalar implicature. Without a scalar implicature, example (73) is compatible with a situation in which there are alternatives in C′ that are taller than Yosi. The scalar presupposition just requires Yosi to be tall by some standard and for others in the context to be tall by a shorter standard. However, there is nothing preventing the existence of alternatives who are *much* taller than the shorter standard, perhaps even taller than Yosi. There is reason to believe that a general pragmatic mechanism is blocking this possibility. For example, the following example from Masamuto (1995) shows that positive statements can be bounded by the introduction of a higher point on the scale.

[5]Recall that the analysis of *especially* as *even more*$_F$ is compatible with classic notions of focus association because even though *more* was not pronounced as *more*, it still has an overt morpheme associated with it, namely *especially*. While Greenberg's account of accent on *BIXLAL* is a case of covert focus marking jumping to an independent particle, *especially*'s prominence comes from its own internal composition, which has an overt realization.

(75) Yesterday was warm and today is a little bit more than warm.
Scalar implicature: ¬Yesterday was a little bit more than warm.

In the case of *BIXLAL*, the scalar implicature rules out the possibility that alternative individuals could be tall by the same standard as the prejacent individual. Thus, they must be shorter than the prejacent.

(76) Yosi is *BIXLAL pos* C_F tall.
Presupposes that alternatives are *pos* C' tall, where standard$_C$ >standard$_{C'}$
Scalar implicature: ¬alternatives are *pos* C tall.

Greenberg's analysis is elegant because it is a unified analysis of *bixlal* and *BIXLAL*, and it shows clearly how *even*'s scalar presupposition interacts with other scales to yield intensified meanings. The analysis has some consequences, however, that should be investigated. We have already noted the possibly problematic prediction regarding prosodically weak elements as focus associates. Additionally, we would expect there to be many more *BIXLAL*'s corresponding to focus association with other potential null elements. However, it is not clear that many other uses have been observed. One other use may involve focus association with a generic operator, but this should be studied more carefully.

(77) a. dani nexmad li-veny mishpaxto
dani nice to-members his-family
"Danny is nice to his family members."

b. Hu BIXLAL nexmad
he BIXLAL nice
"He is nice in general."

More important for this paper is the prediction that Greenberg's analysis makes about possible meanings for *especially*. The *even* component of *especially* was argued to only have one viable focus associate, namely the comparative, due to the fact that the comparative was the only element in *even*'s scope that had lexical alternatives. However, if we were to consider *especially*'s domain variable as a possible focus associate, we would make different predictions for *especially*'s behavior under negation. In particular, we would expect it to always behave like *BIXLAL* under negation, contrary to what we observed.

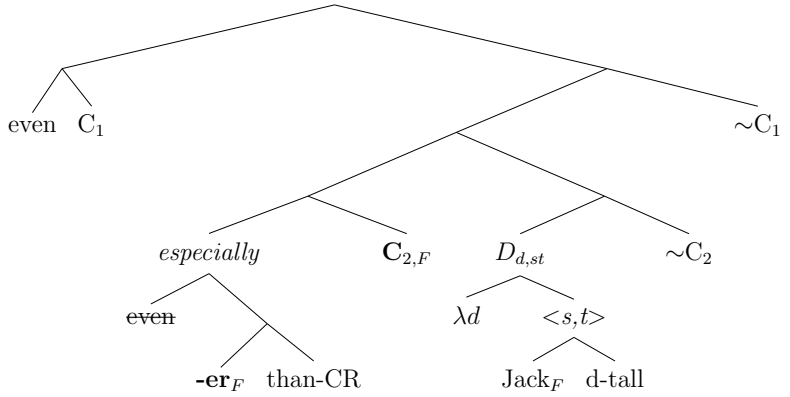


Figure 3: If covert elements could be focus associates, we would expect to see two *especially*'s corresponding to F-marking on the comparative and the domain variable respectively.

It appears that Greenberg's conjecture about covert elements as viable focus associates has an overgeneration problem, so a reanalysis of *BIXLAL* would be desirable. It is not clear that *BIXLAL* and *especially* should be unified on a single analysis given their distributional differences and different properties under negation, but they might occupy the same space. In what follows, we will explore work by Nouwen that suggests a natural relationship between sentential markedness and degree modification. If his approach to evaluative adverbs is correct, it may provide a basis for understanding how *even* interacts with gradability more generally.

5.1 Nouwen 2011

Zwicky (1970) observed that some sentential adverbs have degree modifier interpretations in gradable contexts while others do not. Nouwen (2011) proposes the generalization that only evaluative adverbs with markedness in their meaning can be degree modifiers. He proposes that a type-shifting operation can take a marked sentential adverb and make it a degree modifier, but that this yields non-sensical meanings for sentential adverbs without markedness.

(78) Puzzle from Zwicky (1970): positive-negative pair of some adverbs show an alternation between degree modifier and sentence adverbial
   a. The children are usually noisy. (sentence adverb)
   b. The children are unusually noisy. (degree modifier)

- Adverbs that pattern like *unusually*: *surprisingly, remarkably, amazingly, terribly, unbelievably...*
- Adverbs that pattern like *usually*: *unsurprisingly, unremarkably, typically, normally...*

We compared *especially* to *surprisingly/really* at the beginning of the paper, so we will center the discussion around Nouwen's and Katz's work on *surprisingly*. Katz (2005) captures the intuition that markedness plays a role in licensing degree modifier interpretations with the following paraphrase of *surprisingly*'s meaning.

(79) Jasper is surprisingly tall.
Jasper is tall to a degree d and every degree $d' \geq d$ is such that it would be surprising were Jasper tall to degree d'.

Applying a similar paraphrase to an unmarked adverb, such as *usually*, reveals an immediate problem. The corresponding paraphrase for *usually tall* must be false: infinitely high degrees of tallness are not usual degrees of tallness.

(80) ??Jasper is tall to a degree d and every degree $d' \geq d$ is such that it would be usual were Jasper tall to degree d'. $\rightarrow$ **This is false.**

Nouwen proposes to formalize Katz's intuition in the following way. A type-shifting operation can turn marked sentential adverbs into degree modifiers with the meaning in (82). On this proposal, type-shifted degree modifiers like *surprisingly* are similar to *pos* in type.

(81) $[\![pos]\!] = \lambda A.\lambda x.\exists d[A(x,d) \& d \geq \text{the contextual standard for } A]$

(82) $[\![\text{surprisingly}]\!] = \lambda A.\lambda d.\lambda x.\lambda w.A(d,x)(w) \& \text{ surprising}_w(A(d,x))$

a. Type ⟨⟨d, ⟨e, ⟨s, t⟩⟩⟩, ⟨d, ⟨e, ⟨s, t⟩⟩⟩⟩

b. $[\![\text{Jasper is surprisingly tall}]\!] = \lambda w.\exists d[\text{tall}_w(J,d)\&\ \text{surprising}_w(\lambda w'.\ \text{tall}_{w'}(J,d))]$

This meaning of *surprisingly* predicts the contrast with *usually* because *tallness* is assumed to be downward monotone. In other words, if someone has a degree of height d, they also have all degrees of height less than d. Nouwen's meaning for *surprisingly* is existential, i.e. if one has any surprising degrees of height, that suffices to say that they are surprisingly tall. On the other hand, this meaning could not extend to *usually* because having some usual degrees of height does not entail that one is tall to a usual degree. Usual degrees of height are lower on the scale than surprising degrees of height so anyone who is surprisingly tall would also have to be usually tall.

We have seen that there is a natural relationship between sentential markedness and degree markedness. A marked sentential adverb like *surprisingly*, when placed in a gradable context, has a coherent interpretation as a top-of scale degree modifier. Assuming that this is a general property of degree scales and markedness, noteworthiness particles (which also have connotations of markedness) like *even* might likewise be expected to have degree modifier counterparts with intensifier interpretations (e.g. *really*). Indeed we have seen two cases where particles containing *even* had top-of-scale interpretations in gradable contexts, *especially* and *BIXLAL*. This might suggest that there is a space of particles we can study ranging from regular sentential adverbs to focus particles in different contexts. Marked sentential adverbs and focus particles alike might type-shift to become degree modifiers and intensifiers respectively.

	Focus particle	Plain adverbial
Sentential markedness	even	evaluative adverbs
Degree markedness	especially	degree adverbs

Table 1: Space of marked particles in gradable and non-gradable contexts

English *especially* could not have been analyzed simply as a type-shifted version of *even* due to its interaction with negation and requirement for standout-ness. It seems, therefore, that English *even* relies on combination with another degree modifier (namely the comparative) to fill out the lower left quadrant in Table 1. English is not alone in this respect. In Slovenian, the word *especially* is translated with both an overt *even* and the phrase *apart from/separately*, showing that while *even* may be integral to this quadrant in the space, it can't be a degree modifier on its own.

(83) Slovenian (p.c. Maša)

še posebej
even apart-from/separately

"especially"

In Hebrew, accented *BIXLAL* might similarly be *even* in combination with some other degree modifier. On the other hand, it could also be a type-shifted *even* acting as a degree modifier, provided that languages can differ in this respect. Both approaches are promising but need to be worked out more fully.

On the first approach, following Greenberg's analysis, perhaps *BIXLAL* is *even+pos*. Since *pos* is generally unpronounced, we correctly predict this string to be pronounced as *even*. Focus on *pos* or an argument of *pos* (perhaps we could represent the comparison class as an argument of *pos*) could appear as accent on *bixlal*, and the rest of Greenberg's analysis would function as normal. Treating *pos* as morphology on *bixlal* avoids our previous criticism of focus association with null elements, though the details of how to represent the comparison class would have to be worked out.

On the second approach, *BIXLAL* is simply *even+accent*, which is interpreted as a degree modifier. For this approach to make sense, we would need a theory of how accent disambiguates the type of *even* we are dealing with: sentential or degree modifier *even*. There is some reason to suspect that accent on certain particles may independently give rise to evaluative inferences. Perhaps a similar process affects our interpretation of *even*. For example, while we saw that *really/surprisingly* did not come with obligatory evaluative inferences, *REALLY/SURPRISINGLY* do. Note that this evaluativity only appears in the prejacent and not in the alternatives (84b).

(84) a. Everyone here is quite short (including Wallace), but in comparison, Wallace$_F$ is really/#REALLY tall.

b. Gromit isn't very tall...but Wendy$_F$ is REALLY/#ESPECIALLY tall.

One way to interpret these results is if accent is taken to introduce new information. By accenting the degree modifier, we background the unmodified proposition as part of the common ground (Schwarzschild 1999). The backgrounded unmodified proposition is interpreted with *pos*, meaning that we infer an evaluative inference in the prejacent.

(85) Yosi is BIXLAL/REALLY tall.
Old information: Yosi is tall = Yosi is *pos* C tall.

On this approach, *BIXLAL* could really just be backgrounding an evaluative inference in the prejacent and then ranking degree properties in the context in terms of likelihood. For this analysis to work, we would need a way to restrict the relevant alternative degree properties to those containing *pos* heights in order to get the alternatives to also have an evaluative inference. I leave this discussion to future research.

6 Conclusion

In this paper, we have examined the properties of English *especially* and shown that these properties mirror those of the complex phrase *even more*$_F$. A decompositional analysis of *especially* as a version of *even more*$_F$ was shown to capture both *especially*'s interaction with negation as well as its evaluative inference in both the prejacent and focus alternatives.

This analysis depended on a theory of *even* with a universal scalar presupposition, following Kartunnen & Peters (1979), and contra Bennett (1982) and Kay (1990). We additionally saw that this analysis has consequences for Greenberg's analysis of Hebrew *BIXLAL*, which was shown to share *especially*'s evaluative inferences but not its behavior with negation. Greenberg's analysis depended on the ability to focus associate with null elements, which led to an overgeneration problem in *especially* and potentially *BIXLAL* as well.

Lastly, we explored the possibility that *especially* and *BIXLAL* are members of a paradigm of *even*-like particles that can act as degree quantifiers. These particles may differ across languages in terms of their internal composition but seem to exhibit some common behaviors, namely evaluativity in the focus alternatives and intensifier-like meanings. Following work by Nouwen, there seems to be a natural relationship between sentential markedness and degree modification relating sentential *surprisingly* to gradable *surprisingly*. This relationship may carry over to the marked focus particle *even*, detailing a natural progression from likelihood particle to intensifier.

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