

Syntax and semantics of the *swarm* alternation

INTRODUCTION Although research on argument alternations is extensive (see Levin 1993, 2015 and references therein), non-truth-conditional meanings have been overlooked almost completely (though see, e.g., Anderson 1970, 1971; Salkoff 1983 on the *swarm* alternation). In this paper, we argue that the *swarm* alternation (*bees are swarming in the garden; the garden is swarming with bees*) is one of those alternations with non-truth-conditional meaning, and the semantics of the non-base alternant of this alternation goes beyond a holistic effect: it entails theme and event abundance (pluractionality) and “dynamic texture” (Dowty 2001), a component that we formalize as the result of event abundance plus secondary imperfectivization; the speaker-oriented components, not-at-issue, are presupposed scalarity and mirativity. The base alternant is in (1a); a naturally-occurring non-base alternant is in (1b).

- (1) a. *Fireflies are glowing in the tree.*
b. *the tree’s glowing with fireflies... truly incredible!!!* (tripadvisor.com)

I. TRUTH-CONDITIONAL MEANING OF THE NON-BASE SWARM ALTERNANT We argue that the non-base alternant entails abundance and “dynamic texture”. The contrast in (1) illustrates a difference in abundance: (1b; non-base) entails a high number of theme referents, (1a; base) does not. A continuation contradicting the abundance of the theme, such as *There are [three/not so many] fireflies*, would be contradictory following the non-base alternant (1b). For dynamic texture, we elaborate on Dowty’s idea that it is a term reflective of the homogenous movement of numerous theme referents and we propose that dynamic texture is composed of event abundance (see also Hoeksema 2009 on the Dutch data) and imperfectivization (our novel contribution). Event abundance is clearly visible in the non-base alternant when the distributive quantifier *each* is attached to the subject, as in (2).

- (2) a. *Each firefly is glowing in the tree.* (base alternant)
b. *Each tree is glowing with fireflies.* (non-base alternant)

Each targets each individual firefly in the base alternant (2a), whereas it can only target the entire tree with many glowing events in the non-base alternant (2b). The second component of dynamic texture, imperfectivization, pertains to the event divisibility properties of the non-base alternant. The overall eventuality is homogenous, both along the timeline and along spatial part/whole structures of sufficient coarse-grainedness; cp. the well-known holistic effect of, e.g., the Dynamic Locative Alternation: *Paul loaded a wagon with hay, #but there was plenty of space for other materials*.

II. NON-TRUTH-CONDITIONAL MEANING OF THE NON-BASE SWARM ALTERNANT We propose the non-base *swarm* alternant carries meaning additional to theme abundance and dynamic texture. We provide a battery of diagnostics demonstrating the fine-grained nature of this meaning. Four are presented below: (i) embedding under *consider* as evidence for speaker evaluation generally (3), (ii) Extreme Degree Modifiers for scalar evaluation (4), (iii) denial and *Hey, wait a minute!* for mirativity (6), and (iv) Obligatory Local Effect for the presupposed nature of scalarity (7) and mirativity (8). The verb *consider* requires its complement to be “some sort of evaluative judgement or decision” (Lasnik 2009: 367); undisputed facts are infelicitous complements, e.g., *#Sertab considers Tbilisi the capital of Georgia*. The non-base alternant is natural without further context, while the base alternant is unnatural, unless, e.g., the type of insect is disputed. Only in the non-base-alternant is speaker evaluation obligatorily present.

- (3) a. *#Sertab considers fireflies to be glowing in the tree.* (base alternant)
b. *Sertab considers the tree to be glowing with fireflies.* (non-base alternant)

The diagnostic in (4) provides more detail on the speaker evaluation in the non-base alternant. Extreme Degree Modifiers such as *flat-out*, *outright*, and *full-on* are perspective-dependent and also infelicitous when modifying neutral content: *Your shoes are flat-out gorgeous!* vs. *#Your shoes are flat-out pretty/okay!* (Morzycki 2012). Extreme Adjectives like *gorgeous* describe a property that holds to an extreme degree. The non-base *swarm* alternant describes an eventuality with extreme scalar values, and, interestingly, it is only the non-base alternant which needs no extra context to be felicitous with the Extreme Degree Modifiers in (4).

- (4) a. *Fireflies are #flat-out/#outright/#full-on glowing in the tree!* (base alternant)
b. *The tree is flat-out/outright/full-on glowing with fireflies!* (non-base alternant)

In addition to scalar evaluation seen in (4), there is the not-at-issue mirativity component, seen above in (1) and shown here in (5).

- (5) S1 *Fireflies are glowing in the tree.* (base alternant)
 S2 *No, that's not true, and it wouldn't be remarkable for me if it was true.*
- (6) S1 *The tree is glowing with fireflies.* (non-base alternant)
 S2 *#No, that's not true. This is not remarkable for me.*
 S2' *Hey wait a minute! This is not remarkable for me.*

It is possible to deny mirativity for the base alternant, but not the non-base alternant, showing that mirativity is a hard-wired meaning component. Denying mirativity with *hey, wait a minute!* (Shannon 1976) is possible in the non-base alternant, showing that mirativity is not-at-issue. The diagnostics in (7)/(8) support our claim that both scalarity and mirativity are presupposed in the non-base alternant. Further evidence comes from embeddings under the predicate *believe*, which requires the embedded clause to be part of the subject's epistemic state, regardless of whether the content of the clause is actually true; Tonhauser et al (2013: 92) use the Obligatory Local Effect diagnostic to demonstrate the difference between presuppositions such as *stop* in *#Josie believes Bill has stopped smoking and that he has never been a smoker*, and non-presuppositions such as non-restrictive relative clauses in *Joan believes the Bill, who is Sue's cousin, is Sue's brother*.

- (7) a. *Josie believes that fireflies are glowing in the tree and that it isn't a big deal [that there is an extremely high amount of fireflies glowing in the tree].* (base alternant)
 b. *Josie believes that the pool is glowing with fireflies and # that it isn't a big deal [that there is an extremely high amount of fireflies glowing in tree pool].* (non-base alternant)
- (8) a. *Josie_j believes that fireflies are glowing in the tree. That fireflies are glowing in the tree isn't remarkable for her_j.* (base alternant)
 b. *Josie_j believes that the tree is glowing with fireflies. #That the tree is glowing with fireflies isn't remarkable for her_j.* (non-base alternant)

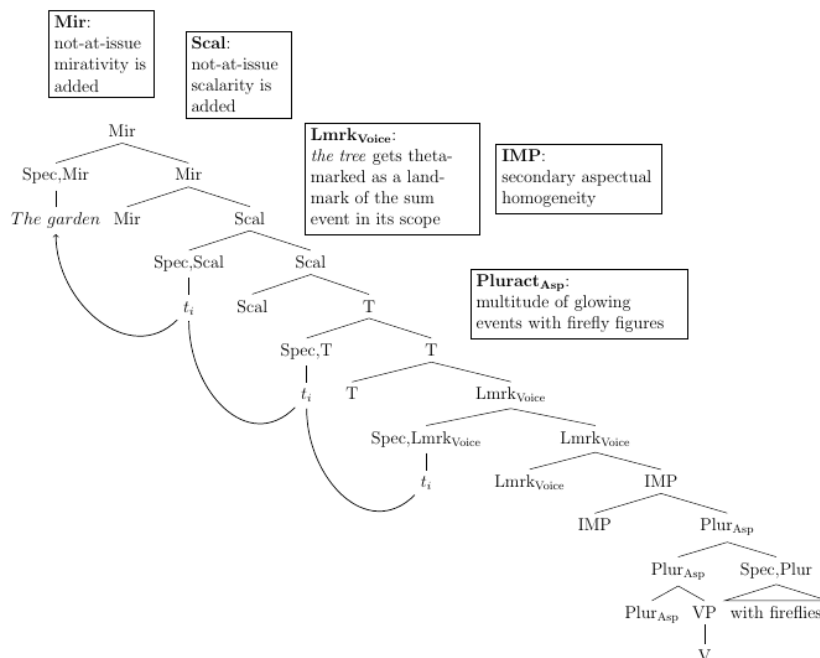
In (7), the base alternant is compatible with a denial of scalar evaluation within the local context, as there is no scalar evaluation present. The non-base alternant (7), however, is infelicitous with this denial of scalar evaluation. Similarly, in (8), the base alternant is compatible with refuted surprise, as there is no mirativity component present. The non-base alternant (8) is infelicitous when surprise or remarkability is refuted in the local context. Only the non-base *swarm* alternant presupposes both scalarity and mirativity. **To summarize:** the non-base alternant entails theme and event abundance and also dynamic texture; see examples (1)/(2). The non-truth-conditional meaning of the non-base alternant comprises presupposed scalar evaluativity and mirativity.

III. SYNTAX OF THE NON-BASE ALTERNANT: As predicted by a cartographic syntax (Cinque 1999, Tescari Neto 2013, Hole 2015, 2017, Bross & Hole 2017, Bross 2019), there are syntactic repercussions of the speaker-oriented semantic components which are active in the non-base alternant. The following diagnostics use non-finite gerunds, as they only project to their categorial level, not to a category dictated by finiteness. Descending the cartographic spine of speaker-oriented categories, the judgments change from symmetrically ungrammatical when the subjects precede speech-act/evaluation adverbs (9); to asymmetrically ungrammatical/grammatical for the base and non-base alternants with mirativity, epistemic modality, and scalarity adverbs (10)-(13).

- (9) a. *I remember fireflies (*frankly/*fortunately) glowing in the tree.* (speech-act; eval.)
 b. *I remember the tree (*frankly/*fortunately) glowing with fireflies.*
- (10) a. *I remember fireflies (*surprisingly) glowing in the tree.* (mirativity)
 b. *I remember the tree (surprisingly) glowing with fireflies.*
- (11) a. *I remember fireflies (*possibly) glowing in the tree.* (epistemic modality)
 b. *I remember the tree (possibly) glowing with fireflies.*
- (12) a. *I remember fireflies (*just) glowing in the tree.* (*just* as in *just gorgeous*; scalarity)
 b. *I remember the tree (just) glowing with fireflies.*
- (13) a. *I remember fireflies (?*once) glowing in the tree.* (deictic tense)
 b. *I remember the tree (once) glowing with fireflies.*

We take the asymmetry seen in (10)-(13) to mean that the non-base alternant (b) always projects these C-level categories, whereas the base alternant (a) never does. Note that mirativity (10) is the highest speaker-oriented category where the landmark subject can grammatically precede the adverb. This is evidence that the landmark subjects move to Spec,Mirative, either in the overt syntax (10a), or at LF as in *Suprisingly, the tree was glowing with fireflies*. We have represented this in the tree in (14).

(14) *The tree was glowing with fireflies.*



In the aspectual projections under T (here only a selection), the judgements are again symmetrical:

- (15) a. *I remember fireflies (habitually) glowing in the tree.* (habitual aspect; Cinque's categories)
- b. *I remember the tree (habitually) glowing with fireflies.* (habitual aspect; Cinque's categories)
- (16) a. *I remember fireflies (still) glowing in the tree.* (continuative aspect I)
- b. *I remember the tree (still) glowing with fireflies.* (continuative aspect I)
- (17) a. *I remember fireflies (briefly) glowing in the tree.* (durative aspect)
- b. *I remember the tree (briefly) glowing with fireflies.* (durative aspect)
- (18) a. *I remember fireflies (almost) glowing in the tree.* (prospective aspect)
- b. *I remember the tree (almost) glowing with fireflies.* (prospective aspect)

The symmetry seen in (15)-(18) is indicative of each alternant obligatorily or optionally projecting up to the level of habitual aspect, which is the highest category immediately dominated by T'. Space limitations prevent us from going into more detail of the account. **To summarize**, the main points of our analysis are: the non-base *swarm* alternant's landmark subject moves from VoiceP to the specifier of MirP. Within this move, non-truth-conditional meaning is added: mirativity and scalar evaluation. As demonstrated in Section I., the non-base alternant entails theme abundance, event abundance, and imperfectivization; meaning components which are acquired below T, in PluractP and ImpP.

IV. OUTLOOK As indicated in the introduction, this layer of meaning in non-base argument alternants is understudied. There are many more alternants which feature high speaker-oriented meaning, e.g., *there*-insertion with evidentiality (a meaning not present in locative inversion).

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