

## Scalarity in the *swarm* alternation<sup>1</sup>

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### 1. Introduction

- In this talk, we observe and analyze a specific not-at-issue meaning in the *swarm* alternation.
- We identify it with the scalar predicate in (PPI) ‘even’ words (Jacobs’ 1983 VIEL).
- We locate this predicate in the low C domain (Hole 2015, 2017, Bross & Hole 2017), just like Horvath’s (2010) EI-operator (Exhaustive Identification).
- A teaser:
  - (1) MUCH **scalarity in *swarm* alternations and ‘even’**
    - a. Stars were (#even) glittering in the sky.
    - b. The sky was (even) glittering with stars.
- Despite intensive research in the domain of argument alternations—especially syntactically—over the past four decades (see Levin 1993, 2015 and references therein), the secondary meaning that we observe has gone unnoticed almost completely (see, e.g., Dowty 2001, Salkoff 1983 on the *swarm* alternation, including the first observations of a holistic effect).
- Our aims are to...
  - (i) ...determine the nature of this secondary meaning (Sections 2 and 3);
  - (ii) ...collect related evidence from prosody and facial gestures (Section 4);
  - (iii) ...present a cartographic proposal that maps the observed secondary meaning to an independently established syntactic C-level projection;
  - (iv) ...speculate on a compositional analysis;
  - (iv) ...describe “projective meaning” as observed here in a (thus far tentatively) new way: as “stationary” C-level meaning that – as part of the morphosyntax (Wiltschko 2014) – interacts across a distance with the lower T-level and Voice-level categories of argument alternations (Section 5).

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- **DISCLAIMER:** The phenomenon that we are discussing is not the same as the so-called holistic effect (cp. section 2.2. below).
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## 2. Introducing and justifying the phenomenon

### 2.1 Demonstrating scalarity

- If there's scalar meaning in the non-base alternant of the *swarm* alternation, non-scalar continuations ought to be odd.
- (2) **MUCH scalarity in *swarm* alternations and incongruous continuations**
- a. Alligators were swimming in the lake, ...but there weren't so many. (base)
  - b. The lake was swimming with alligators,... #but there weren't so many alligators. (non-base)
- (3) **MUCH scalarity in *swarm* alternations and incongruous continuations**
- a. Bees are swarming in the garden, ...but there aren't so many. (base)
  - b. The garden is swarming with bees,... #but there aren't so many bees. (non-base)
- If it's always a MUCH predicate that features in the non-base alternant, then 'not even' embeddings ought to be bad.
- (4) **MUCH scalarity in *swarm* alternations and 'not even'**
- a. The children weren't even swimming in the lake, let alone diving.
  - b. The lake wasn't (#even) swimming with alligators, let alone teeming.
- (5) **MUCH scalarity in *swarm* alternations and 'not even'**
- a. Bees aren't even swarming in the garden, let alone moving into that hollow tree.
  - b. The garden isn't (#even) swarming with bees, let alone infested by them.
- Conversely, 'even' ought to be licensed generally in the non-base alternant (if it is assumed that 'even' features the same MUCH predicate; Jacobs 1983), and may be odd in individual cases in the base alternant.
- (6) **MUCH scalarity in *swarm* alternations and 'even'**
- a. Stars were (#even) glittering in the sky.
  - b. The sky was (even) glittering with stars.
- (7) **MUCH scalarity in *swarm* alternations and 'even'**
- a. The steaks were (#even) sizzling in the pan.
  - b. The pan was (even) sizzling with the steaks.

☞ We will take it for granted that there's a MUCH predicate in the sense of Jacobs (1983) that contributes to the meaning of the non-base alternant of the *swarm* alternation.

## 2.2 MUCH ≠ holistic effect

- It may be tempting to think of MUCH and the well-known holistic effect (Löbner xxx, Roßdeutscher xxx) described for many argument alternations as one and the same thing.
- This would be premature, though.
- *Spray/load* alternations don't display the effects described in (-).

### (8) **no MUCH scalarity in *spray/load* alternations**

- a. They were painting alligators on the wall, ...but not so many.
- b. They were painting the wall with alligators,... but not with so many.

### (9) **no MUCH scalarity in *spray/load* alternations**

- a. They weren't even loading hay on the truck, let alone merchandise.
- b. They weren't even loading the truck with hay, let alone merchandise.

☞ We will assume that the holistic effect is to be distinguished from MUCH in the *swarm* alternation.

## 2.3 Diagnosing the meaning type of MUCH

- **Non-truth-conditionality diagnostics**

### (10) **Independence** (xxx)

[Context: Neighbors Joe and Bill are telling another friend about the local lake last week.]

- a. Alligators were swimming in the lake. (base)
  - i. No, that's not true, that was just a bunch of logs.
  - ii. #No, that's not true, there weren't so many.
  - iii. #Hey, wait a minute! There weren't so many.
- b. The lake was swimming with alligators. (non-base)
  - i. No, that's not true, that was just a bunch of logs.
  - ii. #No, that's not true, there weren't so many.
  - iii. Hey, wait a minute! There weren't so many.

- **(Something like) Projectivity tests** (Tonhauser et al. 2012)

(11) S: The lake was swimming with alligators.

a. **NOT S**

The lake was **not** swimming with alligators.

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b. **POSSIBLY S** (slightly deviating from Tonhauser et al. here)

The lake was possibly swimming with alligators.

✓MUCH > POSSIBLE

✓POSSIBLE > MUCH

c. **SEEMS S**

The lake seemed to be swimming with alligators.

\*MUCH > SEEM

✓SEEM > MUCH

(12) **Immediacy/performativity**

[Context: Joe is telling his out-of-town neighbor about the local lake.]

a. Alligators were swimming in the lake. Today, I don't think any longer that the lake was so full.

b. The lake was swimming with alligators. #Today, I don't think any longer that the lake was so full.

## 2.4 Additional related observations

### 2.4.1 Prosody

- The default prosody in non-base alternants of alternations involving scalarity tends to be richer in focus accents than the default prosody in base alternants of the *swarm* alternation.

(13) What's the matter?

a. Bees are swarming in the GARDen. (base)

b. The garden is SWARming with BEES. (non-base)

c.#The garden is swarming with BEES. (non-base)

### 2.4.2 Facial gesturing


- Scalarity-induced extra foci tend to be accompanied by increased eye aperture.

(14)



The garden is SWARming with BEES.

- Not doing the eye thing (or the extra focusing) leads to a special reading that may be paraphrased as ‘not having realized to a full extent what it means to have the garden swarming with bees’ etc.

(15) #  The garden is swarming with BEES.

☞ Non-base alternants of the *swarm* alternation feature an additional layer of #-obligatory prosody and facial gesturing on the lexical verb.

### 3. A short digression on ontology

- We are as yet insecure as to whether the non-base alternants relate to Davidsonian events, or share features with the mimble tropes of Maienborn & Herdtfelder (2017), albeit in a non-stative guise.

(16) a. The square was white with mimbles.  
b. trope: the whiteness

(17) a. The garden was swarming with bees.  
b. ?trope: the swarming?

- Tropes and events differ in some respects (Bücking 2012, Maienborn 2015, Buscher 2016).

	Davidsonian events	Tropes
PERCEPTIBILITY	+	+
MANNER MODIFICATION	+	-
GRADABILITY	-	+

Table 1: Some characteristics of Davidsonian events and tropes

- It appears to be the case that the non-base alternants pattern with tropes in some respects, but not in others.

(18) **manner modification**  
a. Bienen sirrten summend im Garten.  
b. Der Garten sirrte (\*summend) vor Bienen.

(19) **manner modification**  
a. das summende Sirren der Bienen im Garten  
b. das (\*summende) Sirren des Gartens

(20) **gradability**

- a. ...dass Bienen (\*ganz/immer stärker) im Garten sirrten.
- b. ...dass der Garten (ganz/immer stärker) vor Bienen sirrte.

- We need to explore this area in greater detail.

4. Analysis

Things to be accounted for:

- (i) syntax-and-semantics of the non-base alternant
- (ii) the seemingly untidy projection picture
- (iii) the special prosody and the eye aperture generalization

- To arrive at a good non-base alternant of the *swarm* alternation, the verbal input needs to involve – or be coerced into a reading that involves – ABUNDANCE OF PARALLEL SUBEVENTS.

(21) a. standard – inbuilt ABUNDANCE OF PARALLEL SUBEVENTS  
*flicker, glimmer, sizzle, rustle, blossom, tremble, ...*

b. semelfactive momentaneous verbs that undergo coercion  
*boom, dong, click, ...*

(an aside: isolated *the clicking* also has ABUNDANCE OF VERBAL SUBEVENTS)

[c. aspectually homogeneous effusion verbs  
*stream, sweat, ooze*]

- We will assume here that the MUCH operator sits in the low C-domain.
- It selects TPs with the [+ABUNDANCE] feature, which we take to be a formal feature.
- In the case of the *swarm* alternation, it triggers the coercion facts observed in (21b).

(22) Cartography of clausal categories (partial representation; Cinque 1999, Hole 2015, Bross & Hole 2017)

Speech acts

Evaluation<sub>GOOD/BAD</sub>

Evidentiality

NOT AT-ISSUE

Epistemic modality

**Scalarity**<sub>MUCH</sub>

AT ISSUE/ENTAILED

T

highest scope of adverbial/non-focusing negation

Volition

Deontic modality

...

Aspect

VoiceP

- We assume movement of the locative subject to the specifier of  $\text{Scalarity}_{\text{LOC}}$ , a scalarity head which may only host locative subjects of [+ABUNDANCE]-marked predications.
- Here's a very first attempt at putting this into a lexical entry for an appropriate scalarity head.

(23)  $[[\text{SCALARITY}_{\text{LOC}:\text{MUCH}}]] = \lambda P : P \text{ is } [+ABUNDANCE]\text{-marked} . \lambda x : x \text{ is a location \& the speaker judges } x \text{ to have the } P \text{ property to a degree } d \text{ which is bigger than the contextually determined high threshold value } d' . P(x)$

- It's the identity function which takes as its first argument the TP, and the locative subject as its second argument.
- Everything it does is done in its two domain restrictions.
- What it achieves:
  - (i) it implements the interplay of ABUNDANCE OF PARALLEL SUBEVENTS and scalarity;
  - (ii) it ensures argument structures with locative subjects (if it attracts its specifier from within the TP, and if it has to abide by a shortest-move constraint)

## 5. Scalarity, negation and a parallel with ‘only’

- There’s nothing scalar in examples like (24). No increased eye aperture, no extra accent on *crawling* (unless it’s a jeering echo utterance).

### (24) Negation and MUCH-scalarity

The metro wasn’t crawling with rats

- We think this can be made to follow if we take into account the monotonicity behavior of the involved categories.

### (25) a. Negation and MUCH-scalarity

The metro wasn’t crawling with rats.

- b. predicted here (cf. **Fehler! Verweisquelle konnte nicht gefunden werden.**):

MUCH > NOT > CRAWL

#‘Rats not crawling there is considered a lot.’ (on the relevant reading of *a lot*)

- c. way out:

MUCH isn’t there to begin with in these cases.

- d. tasks for the future:

Why is it so easy to discard this conventional component of meaning?

- Interestingly, a somewhat parallel effect is attested for ‘only’ and scalarity (Hole 2015, in press).

### (26) Negation and LITTLE scalarity with ‘only’

- a. Er ist nur [VIERter geworden]<sub>F</sub>.

he is only fourth become

‘He only [came in FOURTH]<sub>F</sub>.’

scalar interpretation dominant:

‘That he reached no higher rank is considered little.’

LITTLE > EXCL > 4<sup>th</sup>

- b. Er ist nicht nur [VIERter geworden]<sub>F</sub>,

he is not only fourth become

‘He not only [came in FOURTH]<sub>F</sub>, ...’

(scalar interpretation blocked:

\*‘That he reached no higher rank is considered little’)



predicted here:

LITTLE > NOT > EXCL > 4<sup>th</sup>

‘That he reached a higher rank than 4<sup>th</sup> is considered little.’/‘That he didn’t reach no more than the 4<sup>th</sup> rank is considered little.’

way out:

LITTLE isn’t there to begin with in these cases.

- Chinese features a similar effect; cf. Hole in press.
- An important difference between the *swarm* effect and the *nur* effect:  
The *nur* effect obtains iff there’s default prosody with no contrastive accent on *nur*.  
The *swarm* effect obtains iff there’s a corrective focus on *wasn’t* in (25a).
- We have to look into this in greater detail.

Conclusions about negation and the canceling of MUCH/LITTLE

- (i) Negation is a scale-reversing operator.
- (ii) If it intervenes between MUCH and the TP, it disrupts the harmony between entailment patterns of the lower categories and those of the MUCH predicate.
- (iii) To avoid this conflict, MUCH doesn’t project in these cases.
- (iv) The same effect obtains with scalar ‘only’ and LITTLE.

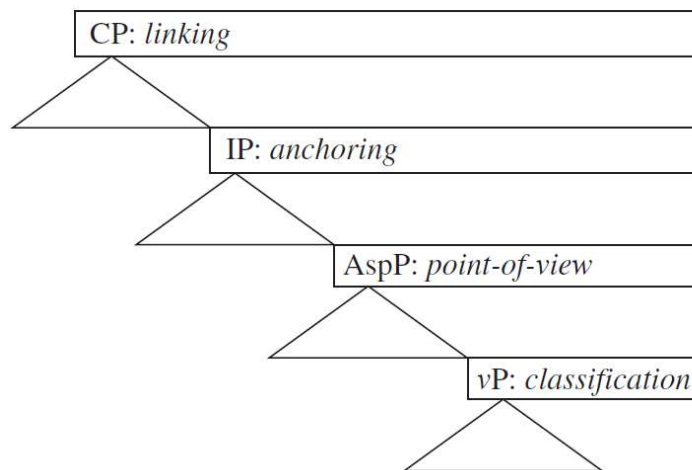
## 6. The larger picture: T-C level interaction à la Wiltschko (2014)

- Dissociates function from content
- Main claims:
  - There are primitive, universal, categories  $\kappa$  which are organized in a hierarchy (=universal spine; see Figure 1 below)
  - There are derived, language-specific categories  $C$  which are derived from  $\kappa$  and “units of language” (UoL)

(27)  $C = \kappa + \text{UoL}$

- Universal Spine:

(75) The areas in the spine



Wiltschko (2014): 75

- All categories along the spine have an unvalued coincidence feature [*u*coin]
  - e.g., in imperatives, time of event situation coincides with instruction: [+coin]
  - in counterfactuals or subjunctives, they do not coincide: [-coin]
- Sometimes morphology can take care of this feature, such as tense markers in the TP
- Here: valuation of [*u*coin] is external, via functional head: *f(unctional) valuation*
  - As said above, scalarity is a C category (=linking)
  - subject<sub>LOC</sub> moves from TP/AspP to CP, where scalarity head is
  - negation can block scalarity; we assume it to be under the scalarity head, but above negation.

- A case study from Wiltschko: Blackfoot (Algonquian, North America)

(61) Valuation typology: Blackfoot

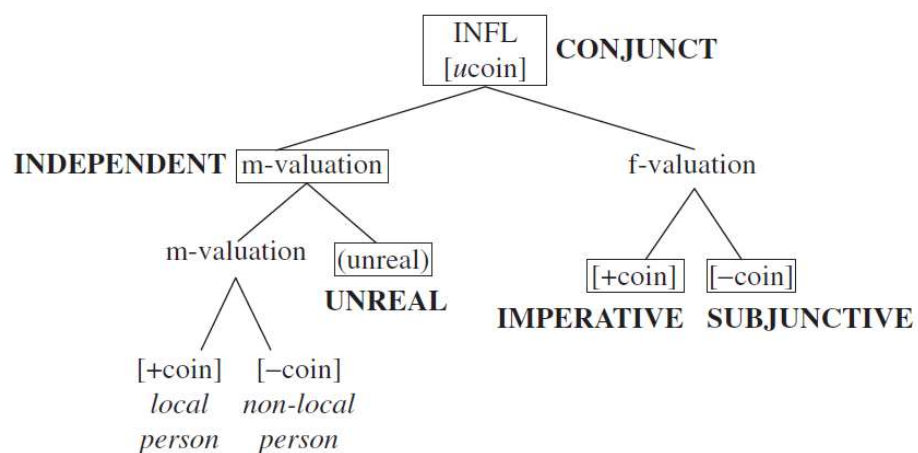


Ilustración 1: Wiltschko 2014:177

- F-valuation in Blackfoot is for imperative (28) and subjunctive (31)
  - The CP hosts the head responsible for communicating with features in TP
- Imperative in Blackfoot is marked by suffix *-t*
  - [+coin]
  - No discussion in Wiltschko of negation interactions in this language

(28)  $c:IMPERATIVE = \langle \kappa:anchoring \rangle + UoL: \langle [f-val:+coin], \pi:-t \rangle$

(29) *Ooyí-t!*

eat.ai- imp

‘Eat!’

Frantz 1991: 114, ex (r) ; cited in Wiltschko 2014 : 176

- Subjunctive in Blackfoot is marked by suffix *-iniki*
  - [-coin]
  - Discussion of negation: interaction effects similar to what we see for scalarity (24)-(26)
  - The incompatibility of negation (*maat-*) and these functional heads indicate that negation is located below<sup>2</sup> (31b)
  - In other words, negation operators cannot be used to value the [ucoin] feature

(30)  $c:SUBJUNCTIVE = \langle \kappa:anchoring \rangle + UoL: \langle [f-val:-coin], \pi:-t \rangle$

(31) a. Nimaatsinowawaatsiks.

nit-**maat**-ino-a-wa-atsiks

1-**neg**-see.ta-dir-prox-nonaff

‘I didn’t see him/her.’

Louie 2008: 1 (2a) ; cited in Wiltschko 2014: 178

b. \*Nitaaksayinakoyi kammaatooyiniki.

nit-áak-sa-inakoyi kam-maat-ooyii-iniki

1-fut-neg-be.visible.ai if-neg-eat.ai-subj.1sg

‘I will be invisible if I don’t eat.’

Louie 2008: 29 (57b) ; cited in Wiltschko 2014: 178

- Turning back to scalarity: our theory requires
  - scalarity to take the TP as an argument  $\rightarrow \langle \kappa:anchoring \rangle$
  - the feature ABUNDANCE, to be positively marked both for the subject<sub>LOC</sub> and the scalarity evaluation  $\rightarrow [+coin]$
  - The UoL which houses this feature in T is the subject<sub>LOC</sub>  $\rightarrow \pi:subject_{loc}$

(32)  $c:SCALARITY = \langle \kappa:anchoring \rangle + UoL: \langle [f-val:+coin], \pi:subject_{loc} \rangle$

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<sup>2</sup> There are two negation markers in Blackfoot, the second, *sa-*, is compatible with the subjunctive but, unlike a counterfactual, does not require it (Wiltschko 2014: 176).

- Another relevant phenomenon: inflected complementizers in Bavarian
- Here's the loose end. In Wiltschko's (2014) theory the categories involved in the [+/-coin] system are all temporal in one way or another. ABUNDANCE OF SUBEVENTS is an aspectual feature, though. Is Wiltschko's (2014) theory just incomplete? Or should the interaction of our aspectual feature be with something other than the CP?

## 7. Conclusions

- In this talk, we explored scalarity as a secondary meaning of non-base alternants of the *swarm* alternation.
- Subscribing to an essentially cartographic clausal syntax, we identified the C-level not-at-issue category "scolarity" as the syntactic locus of this secondary meaning.
- Like this, a low C-level operator is required to be present to fulfill morphosyntactic needs of the non-base alternant studied here.
- Negation is a scale-reversing operator. Its monotonicity-reversing nature disrupts the required scalar harmony between TP and MUCH (*swarm* alternation) and LITTLE (scalar 'only').
- The last resort reading arrived at in these cases is one where scalarity is simply not there.
- It is as yet unclear how projections that appear to be required in the morphosyntax may be absent altogether in the negation cases.
- We propose to see our case study in the light of Wiltschko's (2014) C-T interaction paradigm.
- Many things remain to be worked out.

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