# Aspectual operators and polarity sensitivity

flash talk and breakout room discussion

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**still**

| | |
|---|---|
| POL1 | Jo ✓is / isn't #**still** asleep. |

Jo is **still** asleep.

| | |
|---|---|
| CURR | asleep now |
| OTH | not asleep later |
| CONT | also asleep earlier |
| EVAL | asleep later than expected |

| | |
|---|---|
| POL2 | Jo is **still** ✓young / #old. |

| | **still** |
|---|---|
| POL1 | Jo ✓is / #isn't **still** asleep. |
| | Jo is **still** asleep. |
| CURR | asleep now |
| OTH | not asleep later |
| CONT | also asleep earlier |
| EVAL | asleep later than expected |
| POL2 | Jo is **still** ✓young / #old. |

| | **still** | **anymore** |
|---|---|---|
| POL1 | Jo ✓is / #isn't **still** asleep. | Jo #is / ✓isn't asleep **anymore**. |
| | Jo is **still** asleep. | Jo isn't asleep **anymore**. |
| CURR | asleep now | not asleep now |
| OTH | not asleep later | asleep earlier |
| CONT | also asleep earlier | also not asleep later |
| EVAL | asleep later than expected | not-asleep earlier than expected |
| POL2 | Jo is **still** ✓young / #old. | Jo isn't ✓young / #old **anymore**. |

| | **still** | **anymore** | **already** |
|---|---|---|---|
| POL1 | Jo ✓is / #isn't **still** asleep. | Jo #is / ✓isn't asleep **anymore**. | Jo ✓is / #isn't **already** asleep. |
| | Jo is **still** asleep. | Jo isn't asleep **anymore**. | Jo is **already** asleep. |
| CURR | asleep now | not asleep now | asleep now |
| OTH | not asleep later | asleep earlier | not asleep earlier |
| CONT | also asleep earlier | also not asleep later | also asleep later |
| EVAL | asleep later than expected | not-asleep earlier than expected | asleep earlier than expected |
| POL2 | Jo is **still** ✓young / #old. | Jo isn't ✓young / #old **anymore**. | Jo is **already** #young / ✓old. |

| | **still** | **anymore** | **already** | **yet** |
|---|---|---|---|---|
| POL1 | Jo ✓is / #isn't **still** asleep. | Jo #is / ✓isn't asleep **anymore**. | Jo ✓is / #isn't **already** asleep. | Jo #is / ✓isn't asleep **yet**. |
| | Jo is **still** asleep. | Jo isn't asleep **anymore**. | Jo is **already** asleep. | Jo isn't asleep **yet**. |
| CURR | asleep now | not asleep now | asleep now | not asleep now |
| OTH | not asleep later | asleep earlier | not asleep earlier | asleep later |
| CONT | also asleep earlier | also not asleep later | also asleep later | also not asleep earlier |
| EVAL | asleep later than expected | not-asleep earlier than expected | asleep earlier than expected | not-asleep later than expected |
| POL2 | Jo is **still** ✓young / #old. | Jo isn't ✓young / #old **anymore**. | Jo is **already** #young / ✓old. | Jo isn't #young / ✓old **already**. |

| | *aspectual operators* [👍] | | | |
|---|---|---|---|---|
| | **still** | **anymore** | **already** | **yet** |
| POL1 | ✓ | ✓ | ✓ | ✓ |
| scalar inferences | ✓ | ✓ | ✓ | ✓ |
| POL2 | ✓ | ✓ | ✓ | ✓ |

| | *aspectual operators* [👍] | | | | *modified numerals* [👍] | |
|---|---|---|---|---|---|---|
| | **still** | **anymore** | **already** | **yet** | **at least/most n** | **no more/less than n** |
| POL1 | ✓ | ✓ | ✓ | ✓ | ✓ | NA |
| scalar inferences | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| POL2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| | *aspectual operators* [👉] | | | | *modified numerals* [👉] | | *indefinites* [👉] |
|---|---|---|---|---|---|---|---|
| | **still** | **anymore** | **already** | **yet** | **at least/most n** | **no more/less than n** | **some, irgendein, any, …** |
| POL1 | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ |
| scalar inferences | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| POL2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ? |

| | *aspectual operators* [👉] | | | | *modified numerals* [👉] | | *indefinites* [👉] | *disjunction* [👉] |
|---|---|---|---|---|---|---|---|---|
| | **still** | **anymore** | **already** | **yet** | **at least/most n** | **no more/less than n** | **some, irgendein, any, …** | **ou, …** |
| POL1 | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ |
| scalar inferences | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| POL2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ? | ? |

| | *aspectual operators* [👉] | | | | *modified numerals* [👉] | | *indefinites* [👉] | *disjunction* [👉] | *minimizers* [👉] |
|---|---|---|---|---|---|---|---|---|---|
| | **still** | **anymore** | **already** | **yet** | **at least/most n** | **no more/less than n** | **some, irgendein, any, …** | **ou, …** | **lift a finger, …** |
| POL1 | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ |
| scalar inferences | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| POL2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ? | ? | ✓ |

existing approaches to these patterns in *still, anymore, already, yet*:
narrow, bottom-up focus; often neglect POL; generally fail to achieve unification, within item, category, or phenomenon

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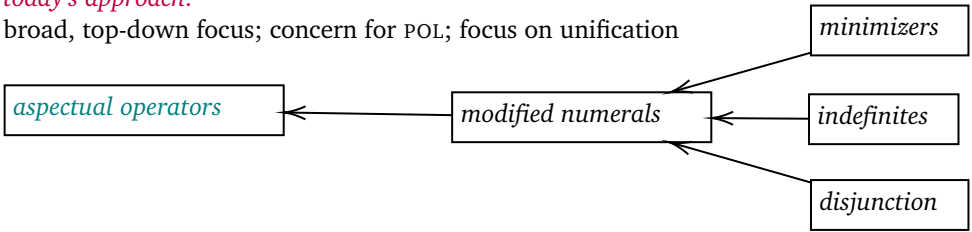
*today's approach:*
broad, top-down focus; concern for POL; focus on unification



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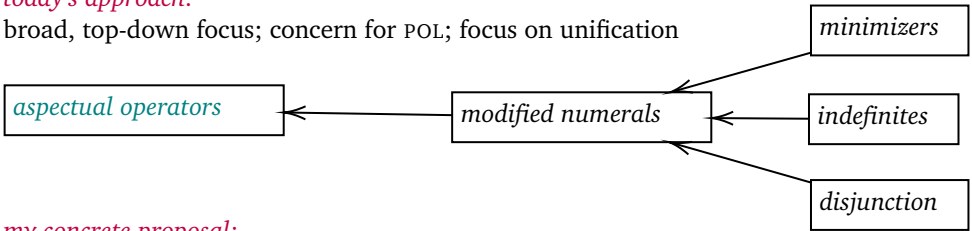


*my concrete proposal:*

- *Still, anymore, already, yet* all point to a positive or a negative extent of time.
- This naturally activates scalar alternatives, SA, and subdomain alternatives, DA.
- This naturally triggers exhaustification via O(nly) and E(ven).
- This yields CURR–OTH—via $O_{SA}$; CONT–EVAL–POL2—via $E_{SA}$; and POL1—likely, via $O_{DA}$.

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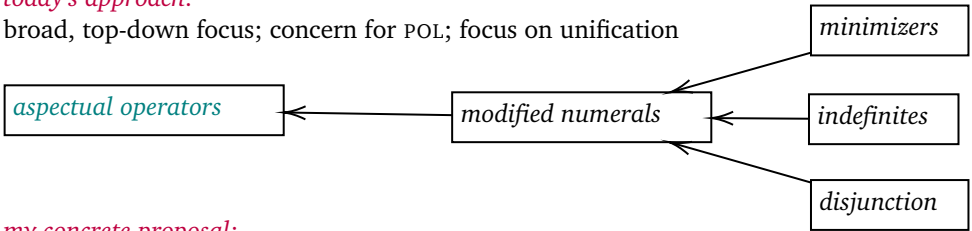


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For more, come to my breakout room…

# Basic assumptions

Truth conditions: (new, using Kennedy 1997's notion of positive and negative extents)

**still/anymore:** $\exists t \in \overbrace{\text{NEG}(t_0)}^{\{t_0, t_{+1}, \ldots\}}[t \in \tau(e)]$ **already/yet:** $\exists t \in \overbrace{\text{POS}(t_0)}^{\{\ldots, t_{-1}, t_0\}}[t \in \tau(e)]$

Alternative generation: (see, e.g., Chierchia 2013 for indefinites)

- By replacing the scalar element with its scalemates we get scalar alternatives, SA.
- By replacing the domain with its subsets we get subdomain alternatives, DA.

Alternative use:

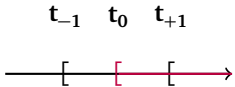
- O(nly)(SA, DA): (contradiction-based O; see Chierchia 2013)

  Asserts the prejacent and says that it entails all the true alternatives (all the non-entailed alternatives are false).

- E(ven)(SA): (see Mihoc 2021a for *true* SA and how it actually points to the *entailed* SA)

  Asserts the prejacent and says that it has true alternatives but it is less like likely / more noteworthy than all these true alternatives, where in the second condition both the prejacent and the alternatives are used in an exact form, as if pre-exhaustified at some level via O.

From these all of CURR–POL2 follow:

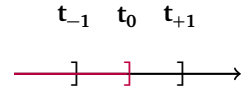



(1) **Jo is still asleep.**

$\exists t \in \overbrace{\text{NEG}(t_0)}^{\{t_0, t_{+1}, \ldots\}}[t \in \tau(e)]$

a. $\text{O}_{\text{SA}}(\exists t \in \text{NEG}(t_0)[t \in \tau(e)])$:
$= \exists t \in \text{NEG}(t_0)[t \in \tau(e)] \wedge$
$\neg \exists t \in \text{NEG}(t_{+1})[t \in \tau(e)]$ (OTH)
$\Rightarrow t_0 \in \tau(e)$ (CURR)

b. $\text{E}_{\text{SA}}(\exists t \in \text{NEG}(t_0)[t \in \tau(e)])$:
$\exists t \in \text{NEG}(t_0)[t \in \tau(e)] \wedge$
$\exists t \in \text{NEG}(t_{-1})[t \in \tau(e)] \wedge$ (CONT)
$\text{O}_{\text{SA}}(\exists t \in \text{NEG}(t_0)[t \in \tau(e)]) \prec_c$
$\text{O}_{\text{SA}}(\exists t \in \text{NEG}(t_{-1})[t \in \tau(e)])$ (EVAL)
Note that EVAL also means: (POL2)
$\text{young(j)}(t_0) \prec_c \text{young(j)}(t_{-1})$ ✓
$\text{old(j)}(t_0) \prec_c \text{old(j)}(t_{-1})$ ✗




CURR-...-POL2

(2) **Jo is already asleep.**

$\exists t \in \overbrace{\text{POS}(t_0)}^{\{\ldots, t_{-1}, t_0\}}[t \in \tau(e)]$

a. $\text{O}_{\text{SA}}(\exists t \in \text{POS}(t_0)[t \in \tau(e)])$
$= \exists t \in \text{POS}(t_0)[t \in \tau(e)] \wedge$
$\neg \exists t \in \text{POS}(t_{-1})[t \in \tau(e)]$ (OTH)
$\Rightarrow t_0 \in \tau(e)$ (CURR)

b. $\text{E}_{\text{SA}}(\exists t \in \text{POS}(t_0)[t \in \tau(e)])$:
$\exists t \in \text{POS}(t_0)[t \in \tau(e)] \wedge$
$\exists t \in \text{POS}(t_{+1})[t \in \tau(e)] \wedge$ (CONT)
$\text{O}_{\text{SA}}(\exists t \in \text{POS}(t_0)[t \in \tau(e)]) \prec_c$
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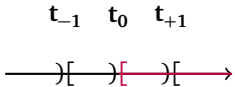
Note that EVAL also means: (POL2)
$\text{young(j)}(t_0) \prec_c \text{young(j)}(t_{+1})$ ✗
$\text{old(j)}(t_0) \prec_c \text{old(j)}(t_{+1})$ ✓

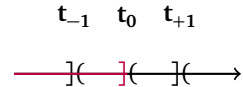



(3) **Jo isn't asleep anymore.**

$\neg\exists t \in \overbrace{\text{NEG}(t_0)}^{\{t_0, t_{+1}, \ldots\}}[t \in \tau(e)]$

a. $\text{O}_{\text{SA}}(\neg\exists t \in \text{NEG}(t_0)[t \in \tau(e)])$
$= \neg\exists t \in \text{NEG}(t_0)[t \in \tau(e)] \wedge$ (CURR)
$\neg\neg\exists t \in \text{NEG}(t_{-1})[t \in \tau(e)]$
$\Rightarrow t_{-1} \in \tau(e)$ (OTH)

b. $\text{E}_{\text{SA}}(\neg\exists t \in \text{NEG}(t_0))[t \in \tau(e)])$:
$\neg\exists t \in \text{NEG}(t_0)[t \in \tau(e)] \wedge$
$\neg\exists t \in \text{NEG}(t_{+1})[t \in \tau(e)] \wedge$ (CONT)
$\neg\text{O}_{\text{SA}}(\exists t \in \text{NEG}(t_0)[t \in \tau(e)]) \prec_c$
$\neg\text{O}_{\text{SA}}(\exists t \in \text{NEG}(t_{+1})[t \in \tau(e)])$ (EVAL)
Note that EVAL also means: (POL2)
$\neg$ young(j)$(t_0) \prec_c \neg$ young(j)$(t_{+1})$ ✓
$\neg$ old(j)$(t_0) \prec_c \neg$old(j)$(t_{+1})$ ✗




CURR-. . . -POL2

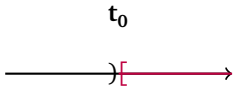
(4) **Jo isn't asleep yet.**

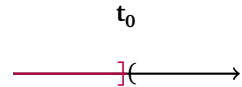
$\neg\exists t \in \overbrace{\text{POS}(t_0)}^{\{t_0, t_{+1}, \ldots\}}[t \in \tau(e)]$

a. $\text{O}_{\text{SA}}(\neg\exists t \in \text{POS}(t_0)[t \in \tau(e)])$
$= \neg\exists t \in \text{POS}(t_0)[t \in \tau(e)] \wedge$ (CURR)
$\neg\neg\exists t \in \text{POS}(t_{+1})[t \in \tau(e)]$
$\Rightarrow t_{+1} \in \tau(e)$ (OTH)

b. $\text{E}_{\text{SA}}(\neg\exists t \in \text{POS}(t_0))[t \in \tau(e)])$:
$\neg\exists t \in \text{POS}(t_0)[t \in \tau(e)] \wedge$
$\neg\exists t \in \text{POS}(t_{-1})[t \in \tau(e)] \wedge$ (CONT)
$\neg\text{O}_{\text{SA}}(\exists t \in \text{POS}(t_0)[t \in \tau(e)]) \prec_c$
$\neg\text{O}_{\text{SA}}(\exists t \in \text{POS}(t_{-1})[t \in \tau(e)])$ (EVAL)
Note that EVAL also means: (POL2)
$\neg$ young(j)$(t_0) \prec_c \neg$ young(j)$(t_{-1})$ ✗
$\neg$ old(j)$(t_0) \prec_c \neg$old(j)$(t_{-1})$ ✓

# the contrast in negative contexts of POL1




(5) Jo #isn't **still** asleep.
Jo ✓isn't asleep **anymore**.

$\neg\exists t \in \overbrace{\text{NEG}(t_0)}^{\{t_0, t_{+1}, \ldots\}}[t \in \tau(e)]$

a. $\text{O}_{\text{(Exh)DA}}(\neg\exists t \in \text{NEG}(t_0))[t \in \tau(e)]$
$= \neg\exists t \in \text{NEG}(t_0))[t \in \tau(e)] \wedge$
$\forall D' \subsetneq \text{NEG}(t_0)[\ldots]$
However we use the DA(plain or ExhDA),
we end up with no strengthening.
Assume *still* does not allow this.
This captures POL1.

(6) Jo #isn't **already** asleep.
Jo ✓isn't asleep **yet**.

$\neg\exists t \in \overbrace{\text{POS}(t_0)}^{\{t_0, t_{+1}, \ldots\}}[t \in \tau(e)]$

a. $\text{O}_{\text{(Exh)DA}}(\neg\exists t \in \text{POS}(t_0))[t \in \tau(e)]$
$= \neg\exists t \in \text{POS}(t_0))[t \in \tau(e)] \wedge$
$\forall D' \subsetneq \text{POS}(t_0)[\ldots]$
However we use the DA(plain or ExhDA),
we end up with no strengthening.
Assume *already* does not allow this.
This captures POL1.

# Conclusion

- *Still* has rich meanings: CURR, OTH, CONT; EVAL; and POL1, POL2. Similar patterns in *anymore, already, yet*. Similar patterns in other categories of language.

- Many proposals for CURR, OTH, CONT, but they typically neglect EVAL, POL1, POL2, and fail to achieve unification within item, category, or phenomenon.

- We provided a new account of CURR, OTH, CONT + a solution to EVAL and POL2, unified within item, category, and phenomenon.

- The analysis also suggests a general solution to POL1.

# Open issues / Outlook

- The status of CURR–OTH changes between *still–already* and *anymore–yet*. Is this a problem?
  - E.g., in *still–already* CURR arises via implicature; in *anymore–yet* it is entailed.
- How to make the presupposition in CONT non-vacuous?
  - We could assume $O_{SA}$ there also, but then it becomes incompatible with the prejacent.
    - This is a general question for E across categories, e.g., in superlative-modified numerals also.
- How about the contrast in *positive* contexts of POL1? (So far we derive $\perp$ for all.)
  - Idea: Consider Chierchia (2013)'s solution for *ever* vs. *irgendein*.
    - Items that can only take plain DA are bad in episodic contexts. Items that can take ExhDA are predicted to be fine in overt free choice contexts and sometimes, if they tolerate embedding under null modals, also in covertly free choice contexts.
    - Challenge: *Jo may* ✓*still* / ✓*already be home.* is fine, but is there a free choice effect?
    - *Help may yet arrive* is fine. Is there a free choice effect?
- How does this analysis fit with other existing accounts of these aspectual operators?
  - E.g., the description of the temporal patterns and their assumed status is sometimes different.
- How does this analysis fit with the crosslinguistic morphosemantics of these particles?
  - Important question that has affected existing analyses and raises questions for our own as well.
- What is the overarching lesson about scalarity, evaluativity, and polarity sensitiviy?
- What is the overarching lesson about positive and negative extents, SA, DA, O, and E?

# Thank you!

# Appendix: Background: Aspectual operators

For previous discusison of *still, anymore, already*, and/or *yet*, usually excluding POL, see Horn (1970), Ladusaw (1980:Ch. 5), Löbner (1989), Michaelis (1992), Michaelis (1993), Mittwoch (1993), Israel (1997), Löbner (1999), Krifka (2000), Klein (2007), Ippolito (2007), Umbach (2012), Zimmermann (2018), Thomas (2018), Beck (2020).

For discussions including POL, see Israel (1997).
Also see Chierchia (2013) for discussion of POL in phrases such as *in weeks*.

# Appendix: Background: Modified numerals

For recent discussion of POL1 and POL2 in modified numerals see Cohen and Krifka (2014), Mihoc (2021a,b), Mihoc and Davidson (2021). From Cohen and Krifka (2014:77ff.):

b. Everybody who uses { more than / #at least } three exclamation marks is a fool.

For recent discussion of EVAL, which I argue is the source for POL2, in negative comparison see Nouwen (2008), Mihoc (2021b). From Nouwen (2008:277):

> I am not the first person to notice such data.[5] Jespersen (1966), for instance, remarks that "*no less than 30* means exactly 30, implying surprise or wonder at the high number" (p. 83). Elsewhere (Jespersen 1949, entry 16.842 on p. 434), he equates *no more than* to *as little as* and explores the full range of uses of the *no more* construction (entries 16.83–16.86). Jespersen notes that there is a difference between *no* and *not* in combinations with comparatives. This contrast, he notes, had already been observed by Stoffel (1894), who for instance discussed the quote "The victorious emperor remained at Rome not more than three months." Stoffel comments on it in the following way: "This means that he remained three months *at most*; if the author had written 'no more than three months', this form of expression would have implied that the author thought this a brief period, and 'no more than three months' would be equivalent to 'three months *only*'" (Jespersen 1949, p. 435).

# Appendix: Background: Indefinites

For recent extensive discussion of POL1 in indefinites see Chierchia (2013) and refs. therein. For suggestions of POL2 in indefinites see Cohen and Krifka (2014:77) and refs. therein, also copied here:

Interestingly, NPIs behave in a way that is exactly the opposite of that of superlative quantifiers—they are fine if the consequent is "bad", but ruled out if the consequent is "good" (Lakoff 1969)[41]:

(121) a. If you eat { some / *any } spinach I will give you $10

b. If you eat { *some / any } candy I will whip you.

Regine Eckardt (pc) shows that the effect is even more pronounced with strong NPIs:

(122) If you budge an inch, I will { kill / *thank } you.

# Appendix: Background: Disjunction

For recent discussion and analyses of POL1 in disjunction see Spector (2014), Nicolae (2017), Mihoc (2020). There is no mention of POL2 here, though it doesn't mean the effect is logically impossible—felicitous examples with overt *even* show the contrary—but merely that disjunction doesn't take a silent E. This, of course, still begs the question why, and if we can find any counterexamples.

# Appendix: Background: Minimizers

For recent discussion and analysis of POL1 and, resp., POL1 and POL2 in minimizers see Chierchia (2013) and, resp., Crnič (2011), and refs. therein, and also Cohen and Krifka (2014) earlier [☞] . Excerpt from Crnič (2011:49ff) below:

(83) a. Everyone that lifted a finger to help was rewarded
b. #Everyone that lifted a finger to help was wearing blue jeans

(85) a. **[EVEN $C_1$] [everyone that [lifted a finger]$_F$ to help was rewarded]**
b. ∃q {that everyone that has done x work to help was rewarded | x is an amount}: that everyone that has lifted a finger to help was rewarded $\lhd_c$ q

(86) a. **[even $C_1$] [everyone that [lifted a finger]$_F$ to help was wearing blue j.]**
b. #∃q {that everyone that has done x work was wearing blue jeans | x is an amount}: that everyone that has lifted a finger to help was wearing blue jeans $\lhd_c$ q

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