In ages is not an NPI, which explains its distribution

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In a million years vs. *in ages*

(1) *Alex has *(not) called in a million years.*
*Alex has *(not) called in ages.*

- Both considered NPIs (von Bergen & von Bergen 1993; Krifka 1995; Hoeksema 2006; Iatridou & Zeijlstra 2021)
- Only minor difference in form
- But: Considerably different corpus distribution

Previous approaches

Components of NPI-licensing (Krifka 1995; Eckardt 2005; Chierchia 2006):
- Core meaning: very general entity
- Alternatives: more specific alternatives
- Exhaustification: sentence with NPI entails every sentence with an alternative
  ⇒ **Exh**(**Lic**(. . . ∃x(**NPI**(x) ∧ . . .)))
- **Note:** Exh is not part of the NPI meaning!

Krifka (1995:240) *in a million years*
- Core: time t in the distant future
- Alt: all times earlier than t.
- Exh: not part of the NPI meaning
  ⇒ **Exh**(**Lic**(. . . **NPI** . . .))

Iatridou & Zeijlstra 2021 *in years*
- Core: max time span [. . . , **now**]
- Alt: all time spans included
- Exh: included in the meaning of *in years*
  ⇒ *in years* is not an NPI
  but an exhaustification operator!
  Exh(**Lic**(. . . **NPI** . . .))

Rizea & Sailer 2020

- Lexical Resource Semantics (Richter & Sailer 2004)
- "Constraints" possilbe semantic representations
- Include all components but the licensor in the lexical entry of an NPI.
- Redundant contribution of operators possible.

(2) *Alex didn't see a thing.*
a. At issue:
$\alpha :\equiv \neg\exists x(\textbf{min-range}(x) \wedge \textbf{see}(\textbf{a}, x))$
b. Full semantic representation:
$\exists A(A = \{P|P \subseteq \textbf{min-r}\} \wedge \textbf{Exh}(\alpha, \textbf{min-r}, A)$

(3) Simplified lexical specification:
Exh(. . . ∃x(**min-r**(x) ∧ . . . x . . .)
Alternatives: $\{P|P \subseteq \textbf{min-r}\}$

Corpus profile

quantitative + qualitative	*in a . . . years*	*in ages*
verbal negation	✓	✓
neg word	✓	✓
Neg Raising	✓	✗
without S	✓	✗
superl./comp.	✓	✓
if-clause	✗	✗
restr. of universal	✗	✗
rhet. *wh* quest.	✓	✗
only	✗	✓
hardly/barely	✗	✓
few N	✗	✗

Quantitative data:
- *in a . . . years*:
  COCA: 643, BNC: 177, GloWbe UK+US 867
- *in ages*: COCA: 501 hits

Qualitative data (google, enTenTen20)
- Neg Rasing *Don't think he's posted in ages.*
- *without* clause
  People know things that I do [. . .]*without seeing me in ages*
- Co-occurrence with *(n)ever* and *even*:
  ✓: *(n)ever in a million years* | ✗: *(n)ever in years*
  ✓: *even in a million years* | ✗: *even in years*

Lexical specification and standard cases

(4) a. *in a mill. years*: **Exh**(. . . ∃t(**mill-years**(t) ∧ . . . t . . .) . . .) Alt: $\{t'|t' \subseteq t\}$
∃t is in the scope of a strong NPI-licensing operator
b. *in ages*: ∃t(**ages**(t) ∧ **Exh**(. . . t . . .)) Alt: $\{t'|t' \subseteq t\}$
Scope Constraint scope of **Exh** "starts" with downward entailing operator binding the event

(5) *Alex hasn't called in a million years* */in years.*
Exh(¬∃t(**mill-years**(t) ∧ **call**(**a**, t))) ∃t(**mill-years**(t) ∧ **Exh**(¬∃t(**call**(**a**, t))))

(6) **Alex has called in a million years* */in years.*
Exh(∃t(**mill-years**(t) ∧ **call**(**a**, t))) ∃t(**years**(t) ∧ **Exh**(∃t(**call**(**a**, t))))

hardly quantifies over eventualities: *in a mill. years* is excluded.
(7) *Alex has hardly called *in a million years* */in years.*
Exh(∃t(**mill-years**(t) ∧ **hardly**(**call**(**a**, t)))) ∃t(**years**(t) ∧ **Exh**(**hardly**(**call**(**a**, t))))

rhetoric *wh* question operator has wide scope: *in years* is excluded.
(8) *Who would've put H.R. and DSM together in a mill. years*/ **in years*?

Account of additional observations

- Co-occurrence with *many* with wide and narrow scope over **Exh**, but not with intervening scope

(9) a. *you have achieved what many can't in a mill. years.* **Many** > **Exh** > ¬ > ∃t
b. *I haven't seen many of you in years* **Many** > ∃t > **Exh** > ¬
c. *there haven't been many good horror movies in years.* ∃t > **Exh** > ¬ > **Many**

- Contrast:*hardly* binds event; *few* binds participant; *not many* binds event plus participant

(10) *there have hardly been good h-movies in years.* | **there have been few good h-movies in years.*

Co-occurrence with *never/ever*: *(n)ever* quantifies over topic time in the scope of negation, i.e., it is in conflict with *in ages*, which quanitfies over topic time outside the scope of negation.

(11) a. *I would have never in a million years imagined I would marry a lawyer* **Exh**(¬∃t(. . .))
b. **I have never imagined I would marry a lawyer in ages.* ∃t(. . . ∧ **Exh**(¬∃t' . . .)

Neg Raising: Horn & Bayer 1984, Sailer 2006: Neg raising as mapping between meanings – including exhaustification (Mirrazi & Zeijlsta 2021).
(12) *I don't think Alex will call in a mill. years.* ↦ *I think* ¬[*A. will call in a mill. years.*]
↦ *I think* **Exh**¬[*A. will call in a mill. years.*]

- *in ages* and the Neg Raising reading contribute **Exh** (redundantly)
- Relevant time span is presupposed and accommodated in the scope of **think**

(13) *I don't think he's posted in ages.* **think**(**Sp**, ∃t(**ages**(t) ∧ **Exh**(¬**post**(x, t))))

Conclusion

- We basically follow the analysis in Iatridou & Zeijlstra 2021, but provide additional data.
- *in ages* has the same meaning components as *in a mill. years* but combines them not like an NPI.

Selected references

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