

A Hierarchy **with**, **of**, and **for** Preposition Supersenses

English **prepositions** are extremely *frequent* and extraordinarily *polysemous*. To facilitate automatic disambiguation, we propose a general-purpose, broad-coverage taxonomy of preposition functions that we call **supersenses**. We document and illustrate supersense-preposition mappings in a new lexical resource.

Prepositional **polysemy** is rampant.

1. be **in** Paris **at** a shop **on** a street **by** the Seine
2. **at** 10 **of** four **in** the afternoon **on** Saturday
3. They ran **to** the roof **for** a quick escape.
4. They made **for** the roof **to** escape the cops.
5. spray paint **on** the wall / spray the wall **with** paint
6. A lot **of** rabbits manage **to** escape being eaten **by** wolves.

Linguists group together related functions with terms like “locative”. We formalize a hierarchy of 73 **supersenses** to make these categories precise enough for annotation.

← Supersenses for these examples:

- LOCATION • DESTINATION
- TIME • CLOCKTIMECXN
- AGENT • THEME • PURPOSE • SUPERSET
- INFINITIVAL COMPLEMENT

Category:In

Definition	Example	Supersense
expressing the situation of something that is or appears to be enclosed or surrounded by something else:	I'm living in London; she saw the bus in the rear-view mirror.	SST-Location
used to introduce someone's clothing	Trouserless men looked absurd in socks.	SST-Attribute
indicating the key in which a piece of music is written:	Mozart's Piano Concerto in E flat.	SST-Attribute
as an integral part of (an activity):	In announcing the program, Computershare pointed out the environmental benefits of reducing the use of valuable resources such as trees; He was unsuccessful in running for president	SST-Circumstance
expressing a value as a proportion of (a whole):	a local income tax running at six pence in the pound; Perhaps only one in twenty of the city's adult residents had been born there.	SST-Superset,Value
expressing motion with the result that something ends up within or surrounded by off; something else:	don't put coal in the bath; he got in his car and drove up within or surrounded by off.	SST-Location
expressing a period of time during which an event happens or a situation	they met in 1885; at one o'clock in the morning; I hadn't seen him in years; in my life I have never seen so many cats on a couch; the leaders met for	SST-Deictic,Time

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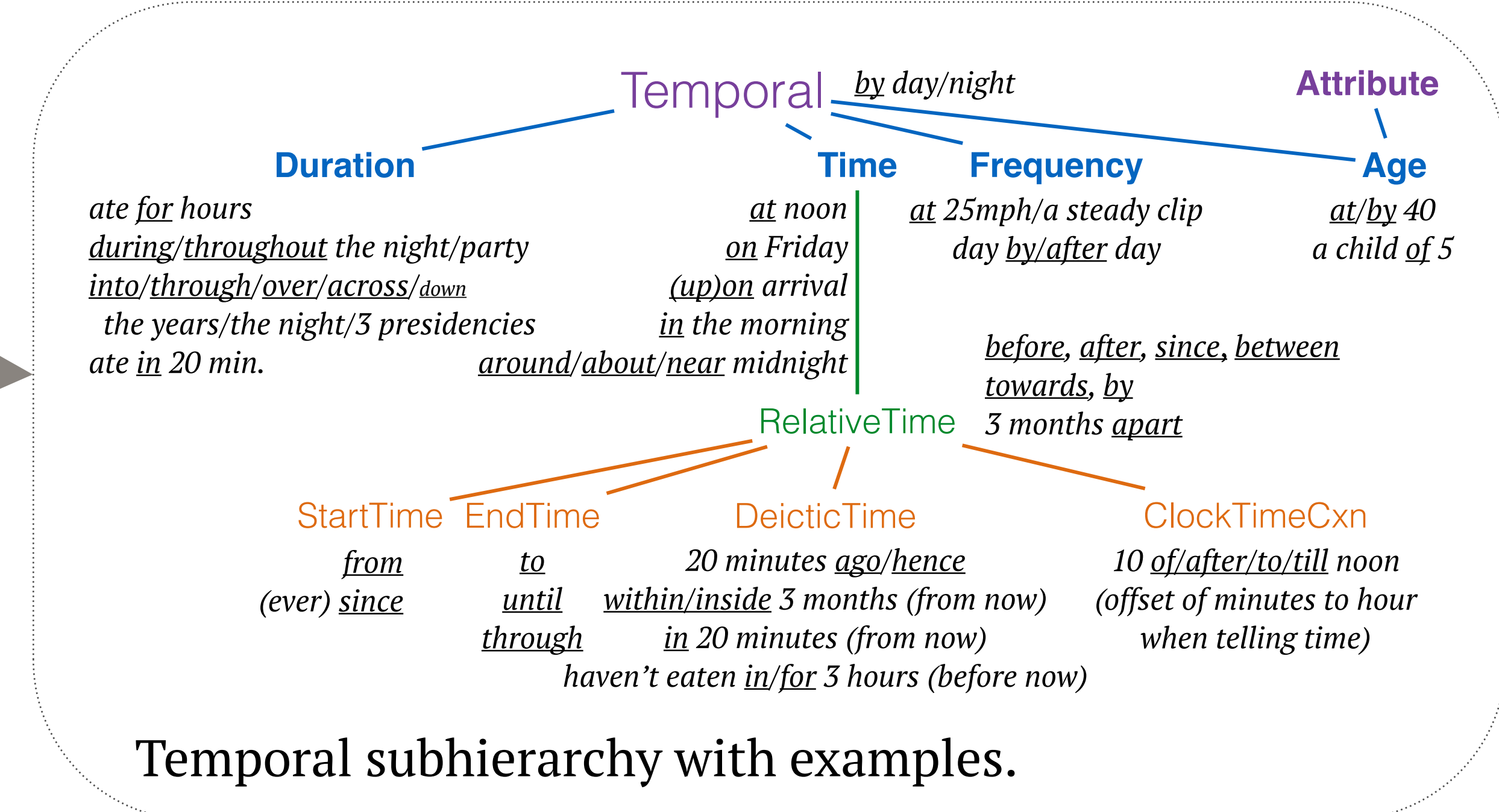
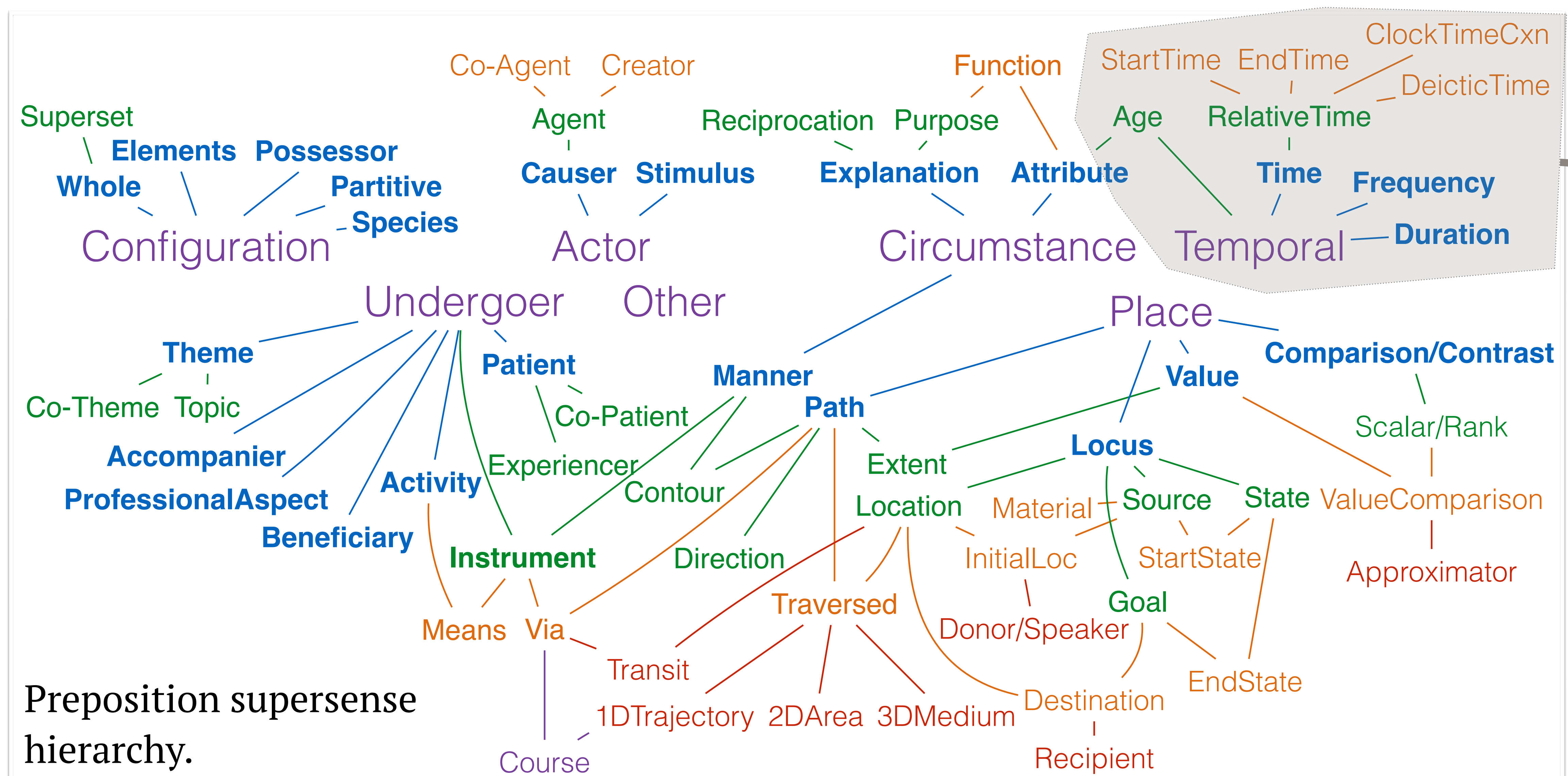
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Categories: In | SP-Temporal | SemRole-FutureTime | SST-Deictic,Time



Preposition supersenses will be annotated in corpora already analyzed for **comprehensive multiword expressions** (Schneider et al. 2014) and **noun and verb supersenses** (Schneider & Smith 2015). **Multiword prepositions** (out of, in order to, according to, ...) will receive a preposition supersense holistically, as will **idiomatic PPs** (e.g., out of line 'inappropriate'). Idiomatic **verb-particle constructions** (e.g., blow the package up) will only receive a verb supersense. Other constructions (e.g., as...as comparatives) are marked specially.

- Building upon previous schemes/resources, our wiki provides partial mappings to:
- * **The Preposition Project** (TPP; Litkowski & Hargraves 2005)
 - ▶ 797 fine-grained preposition senses
 - ▶ 309 prepositions (a majority are multiword)
 - ▶ core set of 34 prepositions/332 senses used for SemEval-2007 shared task (Litkowski & Hargraves 2007)
 - * **Preposition relations** of Srikumar & Roth (2013)
 - ▶ 32 unlexicalized categories
 - ▶ non-hierarchical hard clustering of TPP core senses
 - * **VerbNet** thematic roles (Bonial et al. 2011)
 - ▶ as of 2014, 37 categories (Hwang 2014)
 - ▶ originally designed for core roles of verbs
 - ▶ hierarchical

PrepWiki