

Adposition and Case Supersenses v2.4: Guidelines for English

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Abstract

This document offers a detailed linguistic description of SNACS (Semantic Network of Adposition and Case Supersenses; [Schneider et al., 2018](#)), an inventory of 50 semantic labels (“supersenses”) that characterize the use of adpositions and case markers at a somewhat coarse level of granularity, as demonstrated in the STREUSLE corpus (<https://github.com/nert-gu/streusle/>; version 4.2 tracks guidelines version 2.4). Though the SNACS inventory aspires to be universal, this document is specific to English; documentation for other languages will be published separately.

Version 2 is a revision of the supersense inventory proposed for English by [Schneider et al. \(2015, 2016\)](#) (henceforth “v1”), which in turn was based on previous schemes. The present inventory was developed after extensive review of the v1 corpus annotations for English, plus previously unanalyzed genitive case possessives ([Blodgett and Schneider, 2018](#)), as well as consideration of adposition and case phenomena in Hebrew, Hindi, Korean, and German. [Hwang et al. \(2017\)](#) present the theoretical underpinnings of the v2 scheme. [Schneider et al. \(2018\)](#) summarize the scheme, its application to English corpus data, and an automatic disambiguation task.

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1 Overview

This document details version 2 of a scheme for annotating English prepositions and related grammatical markers with semantic class categories called *supersenses*. The motivation and general principles for this scheme are laid out in publications cited in the abstract. This document focuses on the technical details, giving definitions, descriptions, and examples for each supersense and a variety of prepositions and constructions that occasion its use.

1.1 What counts as an adposition?

“Adposition” is the cover term for prepositions and postpositions. Briefly, we consider an affix, word, or multiword expression to be adpositional if it:

- mediates a semantically asymmetric figure–ground relation between two concepts, and
- is a grammatical item that can mark an NP. We annotate *tokens* of these items even where they mark clauses (as a subordinator) or are intransitive.¹ We also include always-intransitive grammatical items whose core meaning is spatial and highly schematic, like **together**, **apart**, and **away**.

Inspired by [Huddleston and Pullum \(2002\)](#), the above criteria are broad enough to include a use of a word like **before** whether it takes an NP complement, takes a clausal complement (traditionally considered a subordinating conjunction), or is intransitive (traditionally considered an adverb):

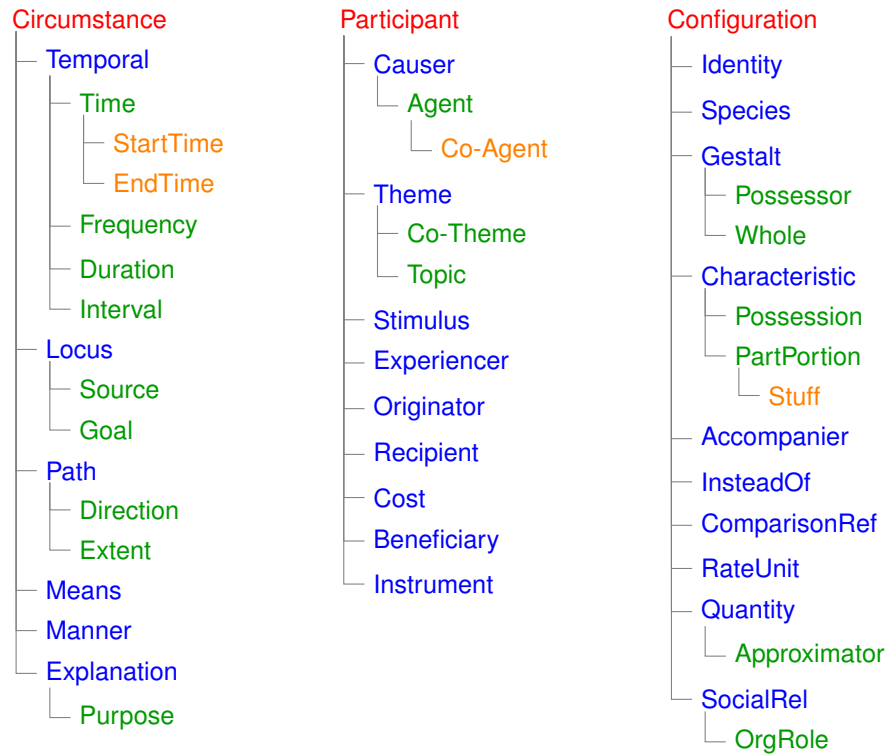
- (1) a. It rained **before** the party. [NP complement]
- b. It rained **before** the party started. [clausal complement]
- c. It rained **before**. [intransitive]

¹Usually a coordinating conjunction, **but** only receives a supersense when it is prepositional, as described under **PARTPORTION**.

Even though they are not technically adpositions, we also apply adposition supersenses to possessive case marking (the clitic **'s** and possessive pronouns), and some uses of the infinitive marker **to**, as detailed in §6.

1.2 Inventory

The v2 hierarchy is a tree with 50 labels. They are organized into three major subhierarchies: **CIRCUMSTANCE** (18 labels), **PARTICIPANT** (14 labels), and **CONFIGURATION** (18 labels).



- Items in the **CIRCUMSTANCE** subhierarchy are prototypically expressed as adjuncts of time, place, manner, purpose, etc. elaborating an event or entity.
- Items in the **PARTICIPANT** subhierarchy are prototypically entities functioning as arguments to an event.
- Items in the **CONFIGURATION** subhierarchy are prototypically entities or properties in a static relationship to some entity.

1.3 Limitations

This inventory is only designed to capture semantic relations with a figure–ground asymmetry. This excludes:

- The semantics of coordination, where the two sides of the relation are on equal footing (see §7.2).
- Aspects of meaning that pertain to information structure, discourse, or pragmatics (see §7.1).

Moreover, this inventory only captures semantic distinctions that tend to correlate with major differences in syntactic distribution. Thus, while there are labels for locative (**LOCUS**), ablative (**SOURCE**), allative (**GOAL**), and **PATH** semantics—and analogous temporal categories—finer-grained details of spatiotemporal meaning are for the most part lexical (viz.: the difference between *in the box* and *on the box*, or temporal *at*, *before*, *during*, and *after*) and are not represented here.²

1.4 Major changes from v1

Changes that affect only a single label are explained below the relevant v2 labels.

- **Removed multiple inheritance.** The v1 network was quite tangled. The structure is greatly simplified by analyzing some tokens as *construals* (Hwang et al., 2017).
- **Revised and expanded the **CONFIGURATION** subhierarchy.**
- **Removed the locative concreteness distinction.** In v1, labels **LOCATION**, **INITIALLOCATION**, and **DESTINATION** were reserved for concrete locations, and the respective supertypes **LOCUS**, **SOURCE**, and **GOAL** used to cover abstract locations. This distinction was found to be difficult and without apparent relevance to preposition system of English or the other languages considered. The concrete labels were thus removed.
- **Removed the location/state/value distinction.** The v1 scheme attempted to make an elaborate distinction between values, states, and other kinds of abstract locations. However, the English preposition system does not seem particularly sensitive to these distinctions. (We are not aware of any prepositions that mark primarily values or primarily states; rather, productive metaphors allow locative prepositions to be extended to cover these, and there are cases where teasing apart abstract location vs. state vs. value is difficult.) Therefore, **STATE**, **STARTSTATE**, **ENDSTATE**, **VALUE**,

²This is not to claim that all members of a category can be grammatical in all the same contexts: *on Saturday* and *at 5:00* are both labeled **TIME**, though the prepositions are by no means interchangeable in American English. We are simply asserting that the different constructions specific to days of the week versus times of the day are minor aspects of the grammar of English.

and VALUECOMPARISON were removed.

- **Revised the treatment of comparison and related notions.** Removed COMPARISON/CONTRAST, SCALAR/RANK, VALUECOMPARISON; moved APPROXIMATOR under QUANTITY.
- **Greatly simplified the PATH subhierarchy.** See §2.3.
- **Simplified the TEMPORAL subhierarchy.** See §2.1.
- **Removed ACTIVITY** (mostly replaced with CIRCUMSTANCE and TOPIC), RECIPROCATION (mostly merged with EXPLANATION), and MATERIAL (merged with SOURCE).
- **Removed abstract labels** AFFECTOR, UNDERGOER, and PLACE.

1.5 Changes from earlier versions of this document

- *Version 2.4 (January 2, 2020):*
 - **Overhauled definition and criteria for PURPOSE versus other infinitivals.** Updated COMPARISONREF, §6.4: Infinitive Clauses, §7.3: OTHER INFINITIVE (i) accordingly.
 - **New section: §6.7: Fixed expressions considered non-adpositional**
 - Several more **possessive** clarifications under GESTALT, POSSESSOR, §6.1: Genitives/Possessives, §7.4: OPAQUE POSSESSIVE SLOT IN IDIOM (\$) (GitHub issues #32, #33, #34, #35, #37, #38)
 - Several more verbs that select for prepositions under THEME (#4, #15, #22, #24, #28, #42) and SPECIES (#39)
 - Added an example of an informational LOCUS (#14).
- *Version 2.3 (August 18, 2019):*
 - Added §6.5.1: PP Idioms vs. Multiword Prepositions.
 - **POSSESSOR, POSSESSION: Substantially revised to clarify their scope.**
 - Added some difficult possessive examples in GESTALT, and elsewhere for AGENT→GESTALT, THEME→GESTALT, SOCIALREL→GESTALT, and EXPERIENCER→GESTALT construals
 - **POSSESSION, THEME: Added discussion of transfer, goods, and services.** Goods and other transferred items are now POSSESSION, while services remain as THEME.
 - **COST:** Clarified the explanation of when money should be treated like any other possession.
 - **Reclassified adverbial and predicative entity-descriptions (depictives, shapes, states) from MANNER to CHARACTERISTIC,** and revised their definitions accordingly.
 - **Specified that TEMPORAL should be used directly for aspectual prepositions** (previously it was an abstract category: §5.1).

- Moved journey-type PPs from **MANNER** to **CIRCUMSTANCE**.
- **MEANS**: Revised the definition and clarified relationship to **MANNER**.
- **SOCIALREL**: Reworded the definition and added a kinship example for **SOCIALREL**→**CHARACTERISTIC**.
- Clarified that **EXPERIENCER** applies to bodily *sensations* (not physical bodily changes), and added cognition examples.
- Changed the treatment of replacees from **INSTEADOF** to **Co-THEME**.
- List PP idioms in the index.
- **PATH**: Clarified that motion events can be located as points (**LOCUS**), and relocated (138) from **MANNER**.
- Rectified inconsistent treatment of a family member in relation to the family (now always **ORGROLE**).
- Organizational collective members: now **ORGROLE**→**PARTPORTION**, formerly **ORGROLE**→**CHARACTERISTIC**.
- Added dotted version number to title and adjusted author list.
- *Version 2.2 (July 2, 2018)*:
 - Policy changes reflected in STREUSLE 4.0:
 - * Rewrote §6.1: Genitives/Possessives and updated corresponding examples to reflect a clarified policy on possessive constructions. Moved wearer from **GESTALT** to **POSSESSOR** and attire from **CHARACTERISTIC** to **POSSESSION**.
 - * Added §6.2: Passives and updated corresponding examples.
 - Policy changes that are reflected in STREUSLE 4.1:
 - * In §6.3.1, changed the function of the first **as** in the **as-as** construction to **EXTENT** (was **IDENTITY**).
 - * Changed the function of **ORIGINATOR** possessives to **GESTALT** (was **POSSESSOR**).
 - * Expanded documentation and removed inconsistencies around containers and collective nouns (see **STUFF**, **QUANTITY**, **CHARACTERISTIC**, **ORGROLE**).
 - * Specified **MANNER**→**COMPARISONREF** for certain adverbial uses of **like**.
 - * Revised the definition of **RECIPIENT** to relax the requirement of animacy.
 - * Mentioned conditions as a subclass of **CIRCUMSTANCE**.
 - * Renamed **PART/PORTION** to **PARTPORTION** to avoid technical complications of the slash.
 - Added §5: Constraints on Role and Function Combinations.
 - Added §6.6: Ages.
 - A few additional examples and fixes.

- Added an index of construals by function.
- Changes from v1 had neglected to mention the removal of AFFECTOR, UNDERGOER, PLACE, ELEMENTS, and SUPERSET (thanks to Ken Litkowski for pointing this out).
- *Version 2.1 (January 16, 2018):*
 - Broadened and clarified DEICTICTIME, moved it up a level in the hierarchy, and renamed it to **INTERVAL**. Clarified the distinction between **INTERVAL** and **DURATION**.
 - Clarified **LOCUS**, **SOURCE**, **GOAL**, **PATH**, and **DIRECTION**, especially with regard to (i) intransitive prepositions, (ii) distance measurements, and (iii) inherent parts.
 - Significantly expanded the scope of **MANNER** to cover states of entities and depictives.
 - Clarified **like** as **COMPARISONREF** with regard to categories and sets, and **PARTPORTION** with regard to elements and exceptions.
 - Clarified **with** in regard to **TOPIC** and **STIMULUS**.
 - Added discussion of the ambiguity of temporal **over**: **DURATION** versus **TIME**→**DURATION**.
 - Extensively clarified **PURPOSE** and **BENEFICIARY**, and their relationship to **COMPARISONREF**, **RECIPIENT**, **EXPERIENCER**, and **STIMULUS**.
 - Clarified that goods and services are **THEME**; expanded on **CO-THEME** examples.
 - **FREQUENCY** used for an iteration.
 - Various selectional verbs and miscellaneous constructions.
 - Added examples of **'s** possessive/genitive marking.
 - Added section for special syntactic constructions (§6).
 - Added special labels (§7).
 - Added an index of adpositions and supersenses, and an index of construals.
 - Revised the title, abstract, and introductory material.
- *Version 2.0 (April 7, 2017): See §1.4*

2 CIRCUMSTANCE

Macrolabel for labels pertaining to space and time, and other relations that are usually semantically non-core properties of events.

CIRCUMSTANCE is used directly for:

- **Contextualization**

- (2) **In** arguing for tax reform, the president claimed that loopholes allow big corporations to profit from moving their headquarters overseas.
- (3) You crossed the line **in** sharing confidential information.
[but see (231c) under TOPIC, which is syntactically parallel]
- (4) I found out **in** our conversation that she speaks 5 languages.
- (5) CIRCUMSTANCE \leadsto LOCUS:
 - a. I haven't seen them **in** that setting.
 - b. **In** that case, I wouldn't worry about it.
- (6) We have to keep going **through** all these challenges. [metaphoric motion] (CIRCUMSTANCE \leadsto PATH)
- (7) Bipartisan compromise is unlikely **with** the election just around the corner.
- (8) **As** we watched, she transformed into a cat. ['while', 'unfolding at the same time as'; not simply providing a 'when'—contrast (25) under TIME]

For these cases, the preposition helps situate the background context in which the main event takes place. The background context is often realized as a subordinate clause preceding the main clause. It may also be realized as an adjective complement:

- (9) a. My tutor was helpful **in** giving concrete examples and exercises.
b. You were correct **in** answering the question.
your answer

Relatedly, we use CIRCUMSTANCE to analyze *involved in*:

- (10) a. I was involved **in** a car accident. (CIRCUMSTANCE)
b. Many steps are involved **in** the process of buying a home.
(WHOLE \leadsto CIRCUMSTANCE)

- **Setting events**

- (11) We are having fun **at** the party. (CIRCUMSTANCE \rightsquigarrow LOCUS)
on vacation

The object of the preposition is a noun denoting a containing event; it thus may help establish the place, time, and/or reason for the governing scene, but is not specifically providing any one of these, despite the locative preposition. These can be questioned (at least in some contexts) with *Where?* or *When?*. (11) entails (12):

- (12) We are **at** the party. (CIRCUMSTANCE \leadsto LOCUS)
on vacation

which may be responsive to the questions *Where are you?* and *What are you doing?*.³ Journey-type PPs are treated similarly:

- (13) They are **on** a journey (CIRCUMSTANCE \rightsquigarrow LOCUS)
 on_ the _way
 on_ their \S _way

- **Occasions**

- (14) I bought her a bike **for** Christmas.
(15) I had peanut butter **for** lunch.

These simultaneously express a **TIME** and some element of causality similar to **PURPOSE**. But the PP is not exactly answering a *Why?* or *When?* question. Instead, the sentence most naturally answers a question like *On what occasion was X done?* or *Under what circumstances did X happen?*

- Any other descriptions of event/state properties that are **insufficiently specified** to fall under spatial, temporal, causal, or other subtypes like **MANNER**. E.g.:

- (16) Let's discuss the matter **over** lunch. [compare (23)]

- **Conditions**

- (17) You can leave **as_long_as** your work is done.
provided
- (18) Whether you can leave depends **on** whether your work is done.
is subject to

³When the object of the preposition is not a (dynamic) event, as with *We are **at** odds/on medication*, **CHARACTERISTIC**~**LOCUS** usually applies: see discussion of state PPs at **CHARACTERISTIC**.

2.1 TEMPORAL

Supercategory for temporal descriptions: **when, for how long, how often, how many times**, etc. something happened or will happen.

Applies directly only to event descriptors with an aspectual quality that do not fit any of the subcategories:

- (19) The party is **over**. (= complete) (TEMPORAL)
- (20) The plans are **in progress**. (TEMPORAL \leadsto LOCUS)
on hold
- (21) a. The party tomorrow is **on**. (= still scheduled to happen in the future)
(TEMPORAL \leadsto LOCUS) [see discussion at CHARACTERISTIC]
b. The party tomorrow is **off**. (= canceled) (TEMPORAL \leadsto LOCUS)

History. The v1 category AGE (e.g., *a child of five*) was a mutual subtype of TEMPORAL and ATTRIBUTE. Being quite specific and rare, for v2 it was removed; see §6.6. Combined with the changes to TIME subcategories (see below), this reduced by 3 the number of labels in the TEMPORAL subtree, bringing it to 7.

2.1.1 TIME

When something happened or will happen, in relation to an explicit or implicit reference time or event.

- (22) We ate **in** the afternoon .
during the afternoon
at 2:00
on Friday
- (23) Let's talk **at** lunch. [compare (16)]
during

For a containing time period or event, **during** can be used and is unambiguously TIME—unlike **in**, **at**, and **on**, which can also be locative.⁴

- (24) a. They will greet us **on** our arrival.
upon
b. I succeeded **on** the fourth attempt. [contrast *on occasion*, (48)]
several occasions

⁴See §5.4 regarding the use of locational metaphors for temporal relations.

(25) **As** meaning ‘when’ (contrast (8) under **CIRCUMSTANCE**):

- a. The lights went out **as** I opened the door.
- b. A bee stung me **as** I was eating lunch.

(26) I will finish **after** tomorrow.

lunch
you (do)

(27) I will finish **by** tomorrow.

lunch

(28) I will contact you **as_soon_as** it’s ready.

once

The preposition **since** is ambiguous:

(29) [‘after’] I bought a new car—that was **since** the breakup. (**TIME**)

(30) [‘ever since’] I have loved you **since** the party where we met. (**STARTTIME**)

(31) [‘because’] I’ll try not to whistle **since** I know that gets on your nerves.
(**EXPLANATION**)

Simple **TIME** is also used if the reference time is implicit and determined from the discourse:

(32) We broke up last year, and I haven’t seen her **since**. [since we broke up]

However, **TIME**→**INTERVAL** is used for adpositions whose complement (object) is the amount of time between two reference points:

(33) We left the party **after** an hour. [an hour after it started] (**TIME**→**INTERVAL**)

(34) We left the party an hour **ago**. [an hour before now] (**TIME**→**INTERVAL**)

The preposition **over** is also ambiguous:

(35) The deal was negotiated **over** (the course of) a year. (**DURATION**)

(36) He arrived in town **over** the weekend. (**TIME**→**DURATION**)

See discussion under **DURATION**.

If the scene role is **TIME**, the PP can usually be questioned with *When?*.

TIME is also used for special constructions for expressing clock times, e.g. identifying a time via an offset:

(37) a. The alarm rang at a quarter **after** 8. (**TIME**)

half **past**

b. The alarm rang at a quarter **to** 8. (**TIME**→**GOAL**)

- c. The alarm rang at a quarter **of** 8.⁵ (TIME \rightsquigarrow SOURCE)
- (38) The alarm rang 15 minutes **before** 8. (TIME) [“15 minutes” modifies the PP]

History. In v1, point-like temporal prepositions (**at**, **on**, **in**, **as**) were distinguished from displaced temporal prepositions (**before**, **after**, etc.) which present the two times in the relation as unequal. RELATIVETIME inherited from TIME and was reserved for the displaced temporal prepositions, as well as subclasses STARTTIME, ENDTIME, DEICTICTIME, and CLOKTIMECXN.

For v2, RELATIVETIME was merged into TIME: the distinction was found to be entirely lexical and lacked parallelism with the spatial hierarchy. CLOKTIMECXN was also merged with TIME, the usages covered by the former (expressions of clock time like *ten to seven*) being exceedingly rare and not very different semantically from prepositions like **before**. DEICTICTIME became INTERVAL.

STARTTIME

When the event denoted by the governor begins.

Prototypical prepositions are **from** and **since** (but see note under TIME about the ambiguity of **since**):

- (39) a. The show will run **from** 10 a.m. to 2 p.m.
b. a document dating **from** the thirteenth century

Note that simple TIME is used with verbs like *start* and *begin*: the event directly described by the PP is the starting, not the thing that started.

- (40) The show will start **at** 10 a.m. (TIME)

ENDTIME

When the event denoted by the governor finishes.

Prototypical prepositions are **to**, **until**, **till**, **up_to**, and **through**:

- (41) The show will run from 10 a.m. **to** 2 p.m.
(42) Add the cider and boil **until** the liquid has reduced by half.
(43) If we have survived **up_to** now what is stopping us from surviving in the future?

⁵In some dialects, this is an alternate way to express the same meaning as (37b). It seems that **to** and **of** construe the same time interval from opposite directions.

- (44) They will be in London from March 24 **through** May 7.

Note that simple **TIME** is used with verbs like *end* and *finish*: the event directly described by the PP is the ending, not the thing that ended.

- (45) The show will end **at** 2 p.m. (TIME)

2.1.2 FREQUENCY

At what rate something happens or continues, or the instance of repetition that the event represents.

- (46) Guests were arriving **at** a steady clip.
- (47) The risk becomes worse **by** the day.
- (48) I see them **on_occasion** . [contrast *on ... occasion*, (24b)]
from_time_to_time
- (49) I see them **on_a_daily_basis**. (FREQUENCY \rightsquigarrow MANNER) [cf. (174a)]
- (50) I keep getting the same message **over** and **over** again.

FREQUENCY is also used when an iteration is specified with an obligatory ordinal number modifier. If the ordinal number is optional, the preposition presumably receives another label:

- (51) a. The camcorder failed **for** the third time. (FREQUENCY)
 b. I skipped lunch **for** three days in_{CHARACTERISTIC}→LOCUS a row. (FRE-
 the third day
 QUENCY) [see (360c)]
 c. We arrived **for** our (third) visit. (PURPOSE)

Contrast: RATEUNIT

2.1.3 DURATION

Indication of **how long** an event or state lasts (with reference to an amount of time or time period/larger event that it spans).

- (52) I walked **for** 20 minutes.
#in
- (53) I walked to^{GOAL} the store **in/within** 20 minutes. [see (65a)]
#for
- (54) I walked a mile **in/within** 20 minutes.
#for

- (55) I mowed the lawn **for** an hour.
in/within

Note that the presence of a goal (53) or extent of an event (*a mile* in (54)) can affect the choice **DURATION** preposition, blocking **for**. (55) shows a direct object which can be interpreted either as something against which partial progress is made—licensing **for** and the inference that some of the lawn was not reached—or as defining the complete scope of progress, licensing **in/within** and the inference that the lawn was covered in its entirety.

The object of a **DURATION** preposition can also be a reference event or time period used as a yardstick for the extent of the main event:

- (56) I walked **for** the entire race. [the entire time of the race]
 (57) I walked **throughout** the night.
through
well into
 (58) The deal was negotiated **over** (the course of) a year.

But **over** can also mark a time period that *contains* the main event and is larger than it. While the path preposition **over** highlights that the object of the preposition extends over a period of time, it does not require that the main event extend over a period of time:

- (59) He arrived in town **over** the weekend. (**TIME**→**DURATION**)

Note that **during** can be substituted for **over** in (59) but not (58).

Some **for-DURATIONS** measure the length of the specified event's *result*:

- (60) a. John went to the store **for** an hour. [he spent an hour at the store, not an hour going there]⁶
 b. John left the party **for** an hour. [he spent an hour away from the party before returning]

A **DURATION** may be a stretch of time in which a simple event is repeated iteratively or habitually:

- (61) a. I lifted weights **for** an hour. [many individual lifting acts collectively lasting an hour]
 b. I walked to the store **for** a year. [over the course of a year, habitually went to the store by walking]

See further discussion at **INTERVAL**.

⁶This stands in contrast with *John walked to the store for an hour*, where the most natural reading is that it took an hour to get to the store (Chang et al., 1998, p. 230).

2.1.4 INTERVAL

A marker that points retrospectively or prospectively in time, and if transitive, marks the time elapsed between two points in time.

The clearest example is **ago**, which only serves to locate the **TIME** of some past event in terms of its distance from the present:

- (62) I arrived a year **ago**. (**TIME**→**INTERVAL**)
[points backwards from the present: before now]

The most common use of **INTERVAL** is in the construal **TIME**→**INTERVAL**: the time of an event is described via a temporal offset from some other time.

Another retrospective marker, **back**, can be transitive (63), or can be an intransitive modifier of a **TIME** PP (64). Plain **INTERVAL** is used in the latter case:

- (63) I arrived a year **back**.⁷ (**TIME**→**INTERVAL**)
(64) I arrived **back** in_{TIME} June. (**INTERVAL**)

(This category is unusual in primarily marking a construal for a different scene role. But this seems justified given the restrictive set of English temporal prepositions that can appear with a temporal offset, and the distinct ambiguity of **in**. **INTERVAL** is designed as the temporal counterpart of **DIRECTION**, which can construe static distance measures; in fact, **TIME****DIRECTION** was considered as a possible name, but **INTERVAL** seemed more straightforward for the most frequent class of usages.)

Other adpositions can also take an amount of intervening time as their *complement* (object):

- (65) I will eat **in** 10 minutes.
a. ['for no more than 10 minutes' reading]: **DURATION**⁸
b. ['10 minutes from now' reading]: **TIME**→**INTERVAL**⁹

⁷While *a while back* and *a few generations back* are generally accepted, the use of **back** rather than **ago** for nearer and more precise temporal references, e.g. *10 minutes back*, appears to be especially associated with Indian English (Yadurajan, 2001, p. 7).

⁸This usage of **in** has been classified under the terms *frame adverbial* (Pustejovsky, 1991) and *span adverbial* (Chang et al., 1998).

⁹This usage of **in**, as well as **ago** (62) and **back** (63, 64), are *deictic*, i.e., they are inherently relative to the speech time or deictic center. (See also Klein (1994, pp. 154–157).) This was taken to be a criterion for the v1 category **DEICTICTIME**, but that was never well-defined in v1 and was broadened for this version.

- (66) The game started at 7:00, but I arrived **after** 20 minutes. (TIME→INTERVAL)
within

Some adpositions license a temporal difference measure in *modifier* position, which does not qualify:

- (67) To beat the crowds, I will arrive a while **before** (it starts). (TIME)
beforehand
- (68) The game started at 7:00, but I arrived 20 minutes **after** (it started). (TIME)
afterward

The preposition **after** can be used either way—contrast (68) with (66).

Note that having **INTERVAL** as a separate category allows us to distinguish the sense of **in** in (65b) from both the **DURATION** sense (65a) and the **TIME** sense (*in the morning*).

Versus DURATION. The prepositions **in** and **within** are ambiguous between **INTERVAL** and **DURATION**.¹⁰ The distinction can be subtle and context-dependent. The key test is whether the phrase answers a *When?* question. If so, its scene role is **TIME**; otherwise, it is a **DURATION**.

- (69) **TIME→INTERVAL:**
- a. I reached the summit **in** 3 days. [= 3 days later, I reached the summit.]
 - b. I was at the summit **within** 3 days. [= 3 days later, I was at the summit.]
 - c. I finished climbing **in** 3 days. [= 3 days later, I finished climbing.]
 - d. They had the engine fixed **in** 3 days. [= 3 days later, they had the engine fixed.]
- (70) **DURATION:**
- a. I reached the summit **in** 3 days. [it took not more than 3 days]
 - b. I had climbed 1000 feet **in** [a total of] 3 days.
 - c. I fixed the engine **in** 3 days. [it took not more than 3 days]

With a negated event, we use **DURATION**:

- (71) I haven't eaten **in** hours. [hours have passed since the last time I ate]
for
 (#When haven't you eaten?)

¹⁰By contrast, **after** seems to strongly favor **TIME→INTERVAL**. *After a week, I had climbed all the way to the summit* is possible, but the conclusion that the climbing took a week may be an inference rather than something that is directly expressed.

History. Version 1 featured a label called DEICTICTIME, under RELATIVETIME, which was meant to cover **ago** and temporal usages of other adpositions (such as **in**) whose reference point is the utterance time or deictic center. This concept proved difficult to apply and was (without good justification) used as a catch-all for intransitive usages of temporal prepositions. For v2, the new concept of **INTERVAL** is broader in that it drops the deictic requirement (also covering **within**), while **TIME** has been clarified to include intransitive usages of prepositions like **before** where the reference time can be recovered from discourse context.

2.2 **LOCUS**

Location, condition, or value. May be abstract.

- (72) I like to sing **at** the gym .
 on Main St.
 in the shower
- (73) The cat is **on_top_of** the dog.
 off
 beside
 near
- (74) There are flowers **between** the trees.
 among
- (75) When you drive north, the river is **on** the right.
- (76) I read it **in** a book .
 on a website
- (77) the data **in** the study
- (78) The charge is **on** my credit card.
- (79) We met **on** a trip to Paris.
- (80) The Dow is **at** a new high.
 20,000
- (81) That's **in** my price range.

The **LOCUS** may be a part of another scene argument: part of a figure whose static orientation is described, or a focal part of a ground where contact with the figure occurs:¹¹

- (82) She was lying **on** her back.

¹¹**PARTPORTION** was considered but rejected for these cases. Instead we assume the verb semantics would stipulate that it licenses a **THEME** as well as a (core) **LOCUS** which must be a part of that **THEME**.

- (83) a. She kissed me **on** the cheek.
b. I want to punch you **in** the face.

Words that incorporate a kind of reference point are **LOCUS** even without an overt object:

- (84) a. The cat is **inside** the house.
b. The cat is **inside**.
(85) a. All passengers are **aboard** the ship.
b. All passengers are **aboard**.

LOCUS also applies to **in**, **out**, **off**, **away**, **back**, etc. when used to describe a location without an overt object:

- (86) a. The doctor is **in** the office.
out_of
away_from
b. The doctor is **in** .
out
away
c. They are **out** to eat.

And to **around** meaning ‘nearby’ or ‘in the area’:

- (87) Will you be **around** in the afternoon?
(88) She’s the best doctor **around**!

In a phenomenon called **fictive motion** (Talmy, 1996), dynamic language may be used to describe static scenes. We use construal for these:

- (89) A road runs **through** my property. (**LOCUS**→**PATH**)
(90) John saw Mary **through** the window.¹² (**LOCUS**→**PATH**)
over the fence
(91) The road extends **to** the river. (**LOCUS**→**GOAL**)
(92) I saw him **from** the roof. (**LOCUS**→**SOURCE**)
(93) Protesters were kept **from** the area. (**LOCUS**→**SOURCE**)
missing
(94) a. We live **across_from** you. (**LOCUS**→**SOURCE**)

¹²The scene establishes a static spatial arrangement of John, Mary, and the window/fence, with only metaphorical motion. Yet this is a non-prototypical **LOCUS**: it cannot be questioned with *Where?*, for example. Moreover, we understand from the scene that the object of the preposition is something with respect to which the viewer is navigating in order to see without obstruction.

- b. We're just **across** the street from_{LOCUS→SOURCE} you. (LOCUS→PATH)

Construal is also used for prepositions licensed by scalar adjectives of distance, (95), and prepositions used with a cardinal direction, (96):

- (95) a. We are quite close **to** the river. (LOCUS→GOAL)
 b. We are quite far **from** the river. (LOCUS→SOURCE)
- (96) a. The river is **to** the north. (LOCUS→GOAL) [cf. (75)]
 b. The river is north **of** Paris. (LOCUS→SOURCE)

See also LOCUS→DIRECTION for static distance measurements, described under DIRECTION.

Qualitative states of entities are analyzed as CHARACTERISTIC→LOCUS, as described under CHARACTERISTIC.

2.2.1 SOURCE

Initial location, condition, or value. May be abstract.

For motion events, the initial location is where the thing in motion (the figure) starts out. SOURCE also applies to abstract or metaphoric initial locations, including initial states in a dynamic event.

In English, a prototypical SOURCE preposition is **from**:

- (97) The cat jumped **from** the box.
 out_of
- (98) The cat jumped **from** the ledge.
 off_of
 off
- (99) I got it **from** the internet.
 off
- (100) people **from** France
- (101) The temperature is rising **from** a low of 30 degrees.
- (102) I have arrived **from** work.
- (103) We discovered he was French **from** his attire. [indication]
- (104) I made it **out_of** clay. [material]
- (105) She awoke **from** a coma.
 came **out_of**
- (106) We are moving **off_of** that strategy.

The SOURCE use of **from** can combine with a specific locative PP:

(107) I took the cat **from** behind_{LOCUS} the couch.

Note that **away_from** is ambiguous between marking a starting point (**SOURCE**) and a separate orientational reference point (**DIRECTION**):

(108) At the sound of the gun, the sprinters ran **away_from** the starting line.
from
(**SOURCE**)

(109) The bikers ride parallel to the river for several miles, then head east, **away_from** the river. (**DIRECTION**: bikers are never at the river)
#from

Note, too, that **off(_of)** and **out(_of)** can also mark simple states:

(110) I am **off** medications. (**CHARACTERISTIC**→**LOCUS**)
work

(111) The lights are **off**. (**CHARACTERISTIC**→**LOCUS**)
out

(112) Stay **out_of** trouble. (**CHARACTERISTIC**→**LOCUS**)

States are discussed at length under **CHARACTERISTIC**. There is also a (negated) possession sense of **out/out_of**:

(113) We are **out_of** toilet paper. (**POSSESSION**)

Sometimes a specific **SOURCE** is implicit, and the preposition is intransitive. But if no specific referent is implied, another label may be more appropriate:

(114) The cat was sitting on the ledge, then jumped **off**. (**SOURCE**: implicit ‘(of) it’)

(115) He was offered the deal, but walked **away**. (**SOURCE**: implicit ‘from it’)

(116) The bird flew **away**. (**DIRECTION**: vaguely away from the viewpoint)
off

SOURCE is prototypically inanimate, though it can be used to construe animate **PARTICIPANTS** (especially **ORIGINATOR** and **CAUSER**). Contrasts with **GOAL**.

Agency as giving. When an **AGENT**’s action to help somebody is conceptualized as giving, and the nominalized action as the thing given, then **from** can mark the **AGENT** (metaphorical giver). If the **from**-PP is adnominal, **AGENT**→**SOURCE** is used (117). However, if the **from**-PP is adverbial, and the verb relates to the metaphoric transfer rather than the event described by the action nominal, then the argument linking becomes too complicated for this scheme to express; simple **SOURCE** is used by default (118):

(117) The attention **from** the staff made us feel welcome. (AGENT→SOURCE)

(118) **SOURCE:**

- a. I received great care **from** this doctor.
- b. I got a second chance **from** her.
- c. I need a favor **from** you.

2.2.2 **GOAL**

Final location (destination), condition, or value. May be abstract.

Prototypical prepositions include **to**, **into**, and **onto**:

(119) I ran **to** the store.

(120) The cat jumped **onto** the ledge.

(121) I touched my ear **to** the floor.

(122) She sank **to** her knees.

(123) Add vanilla extract **to** the mix.

(124) Everyone contributed **to** the meeting.

(125) The temperature is rising **to** a high of 40 degrees.

(126) We have access **to** the library's extensive collections.

(127) She slipped **into** a coma.

(128) The drugs put her **in** a coma. (GOAL→LOCUS)

(129) **Result** (Huddleston and Pullum, 2002, p. 1224):

- a. We arrived at the airport only **to** discover that our flight had been canceled.
- b. May you live **to** be 100!

For motion events, a **GOAL** must have been reached if the event has progressed to completion (was not interrupted). **DIRECTION** is used instead for **toward(s)** and **for**, which mark an intended destination that is not necessarily reached:

(130) a. I headed **to** work. (GOAL)

b. I headed **towards** work but never made it there. (DIRECTION)

for
#to

go to. A conventional way to express one's status as a student at some school is with the expression *go to* (*name or kind of school*). Construal is used when *go to* indicates student status, rather than (or in addition to) physical attendance:

(131) I went **to** (school at_{LOCUS}) UC Berkeley. (ORGROLE→GOAL)

(131') I went **to** UC Berkeley for the football game. (GOAL)

Going to a business as a customer, going to an attorney as a client, going to a doctor as a patient, etc. can also convey long-term status, but there is considerable gray area between habitual going and being in a professional relationship, so we simply use GOAL:

(132) I go **to** Dr. Smith for my allergies. (GOAL)

Locative as destination. English regularly allows canonically static locative prepositions to mark goals with motion verbs like *put*. We use the GOAL→LOCUS construal to capture both the static and dynamic aspects of meaning:

(133) GOAL→LOCUS:

- a. I put the lamp **next_to** the chair.
- b. I'll just hop **in** the shower.
- c. I put my CV **on** the internet.
- d. The cat jumped **on** my face.
- e. The box fell **on** its side.
- f. We arrived **at** the airport.

Application of a substance.

- (134) a. the paint that was applied **to** the wall (GOAL)
b. the paint that was sprayed **onto** the wall (GOAL)
c. the paint that was sprayed **on** the wall (GOAL→LOCUS)

The wall is the endpoint of the paint, hence GOAL is the scene role. (Though the wall can be said to be affected by the action, we prioritize the motion aspect of the scene in choosing GOAL rather than THEME.)

GOAL is prototypically inanimate, though it can be used to construe animate PARTICIPANTS (especially RECIPIENT). Contrasts with SOURCE.

2.3 PATH

The ground that must be covered in order for the motion to be complete.

The ground covered is often a linear extent with or without specific starting and ending points:

- (135) The bird flew **over** the building.
- (136) The sun traveled **across** the sky.
- (137) Hot water is running **through** the pipes.
- (138) They dance **in** a circle. (PATH→LOCUS)

It can also be a waypoint/something that must be passed or encircled.

- (139) We flew to Rome **via** Paris.
- (140) I go **by** that coffee shop every morning.
- (141) The earth has completed another orbit **around** the sun.

If this is a portal in the boundary of a container, it is often construed as **SOURCE**, **GOAL**, or **LOCUS**:

- (142) The bird flew **in** the window. (PATH→LOCUS)
- (143) The bird flew **out** the window. (PATH→SOURCE)
- (144) A cool breeze blew **into** the window. (PATH→GOAL)

However, if the entirety of the motion event is simply located, **LOCUS** applies:

- (145) The bird was flying **in** the house. [The flying took place in the house.]
(LOCUS)
- (146) They were running **on** the street. [The running took place on the street.]
(LOCUS)

The prepositions **around** and **throughout** can mark a region in which motion that follows an aimless or complex trajectory is contained. Construal is used for these, whether or not the region is explicit:

- (147) LOCUS→PATH:
 - a. The kids ran **around**.
 - b. The kids ran **around** the kitchen.
throughout
 - c. The kids ran **around** in the kitchen.

See also: **INSTRUMENT**, **MANNER**

History. The v1 hierarchy distinguished many different subcategories of path descriptions. The labels TRAVERSED, 1DTRAJECTORY, 2DAREA, 3DMEDIUM, CONTOUR, VIA, TRANSIT, and COURSE have all been merged with **PATH** for v2.

2.3.1 **DIRECTION**

How motion or an object is aimed/oriented.

A **DIRECTION** expresses the orientation of a stationary figure or of a figure's motion. Prototypical markers¹³ are **away** and **back**; **up** and **down**; **off**; and **out**, provided that no specific **SOURCE** or **GOAL** is salient:

- (148) The bird flew **up** .
 out
 away
 off

(149) I walked **over** to where they were sitting.

(150) The price shot **up**.

In addition, transitive **toward(s)**, **for**, and **at** can indicate where something is aimed or directed (but see discussion at **GOAL**):

(151) The camera is aimed **at** the subject.

(152) The toddler kicked **at** the wall.

See discussion of **away_from** at **SOURCE**.

Distance. **LOCUS**→**DIRECTION** is used for expressions of static distance between two points:

- (153) a. The mountains are 3 km **away**. (**LOCUS**→**DIRECTION**)
 apart
 b. The mountains are 3 km **away_from** our house. (**LOCUS**→**DIRECTION**)

This also applies to distances measured by *travel time* (the amount of time is taken to be metonymic for the physical distance):

- (154) The mountains are an hour **away**. (**LOCUS**→**DIRECTION**)
 apart

Compare **EXTENT**, which is the length of a path of motion or the amount of change.

¹³Known variously as *adverbs*, *particles*, and *intransitive prepositions*.

Informal direction modifier in location description.

- (155) They live (way) **out** past_{LOCUS→PATH} the highway. (LOCUS→DIRECTION)
over by_{LOCUS} the school

Cf. (64) at **INTERVAL**.

2.3.2 **EXTENT**

The size of a path, amount of change, or degree.

This can be the physical distance traversed or the amount of change on a scale:

- (156) We ran **for** miles.
(157) The price shot up **by** 10%.
(158) an increase **of** 10% (EXTENT→IDENTITY)

For static distance measurements, see **DIRECTION**.

For scalar **as** (see §6.3.1), **EXTENT** serves as the function (and sometimes also the role):

- (159) a. I helped **as** much as I could. (EXTENT)
b. Your face is **as** red as a rose. (CHARACTERISTIC→EXTENT)
c. I stayed **as** long as I could. (DURATION→EXTENT)

EXTENT also covers degree expressions, such as the following PP idioms:

- (160) a. I'm not tired **at_all**.
b. The food is mediocre **at_best**.
c. You should **at_least** try.
d. It is the worst **by_far**.
e. We've finished **for_the_most_part**.
f. It was a success **in_every_respect**.
on_all_levels
g. I hate it when they repeat a song **to_death**.

Typically these are licensed by a verb or adjective.

2.4 MEANS

Secondary action or event presented as playing an intermediate causal role in facilitating (but not instigating) the main event.

Prototypically a volitional action, though not necessarily (164). A volitional **MEANS** will often modify an intended result, though the outcome can be unintended as well (163).

(161) Open the door **by** turning the knob.

(162) They retaliated **by** shooting .
with shootings

(163) The owners destroyed the company **by** growing it too fast.

(164) Chlorophyll absorbs the light **by** transfer of electrons.

MEANS is similar to **INSTRUMENT**, which is used for causally supporting entities and is a kind of **PARTICIPANT**.

Contrast with **EXPLANATION**, which characterizes **why** something happens. I.e., an **EXPLANATION** portrays the secondary event as the causal *instigator* of the main event, whereas **MEANS** portrays it merely as a *facilitator*.

Contrast also with **MANNER**. Both **MEANS** and **MANNER** elaborate on the **how** of an event; however, a **MANNER** describes a *quality* of the main event, rather than specifying a facilitating event.

History. In v1, **MEANS** was a subtype of **INSTRUMENT**, but with the removal of multiple inheritance for v2, the former was moved directly under **CIRCUMSTANCE** and the latter directly under **PARTICIPANT**.

2.5 MANNER

Qualitative description of a situation, adding color to the main scene.

MANNER is used as the scene role for several kinds of descriptors which typically license some sort of *How?* question:

- The style in which an action is performed or an event unfolds, expressed adverbially (canonical use of the term “manner”):

(165) He reacted **with** anger.¹⁴
in anger
angrily

¹⁴ He reacted **out_of** anger is **EXPLANATION**→**SOURCE**.

- (166) He reacted **with** nervous laughter. [contrast: **MEANS**]
- (167) I wrote the book **in** French. [contrast (360d)]
They chatted
- (168) I made the decision **by** myself . [see §6.5.2]
without anyone else
on_ my _own
- (169) We talked **in** person.
- (170) **MANNER**→**COMPARISONREF**:
a. You eat **like** a pig (eats).
b. You smell **like** a pig.
- (171) Your father smells **of** elderberries. (**MANNER**→**STUFF**) [also (425)]
The soup tastes
- (172) She loves teaching, and it shows **in** her smile. (**MANNER**→**LOCUS**)
- By contrast, depictives characterizing a participant of an event have a scene role of **CHARACTERISTIC**:
- (173) She entered the room **in** a stupor. (= she was in a stupor when she
drunk
entered) (**CHARACTERISTIC**→**LOCUS**) [repeated: **CHARACTERISTIC**]
- *What + like* (*what he looks like*, etc.): see (424) under **COMPARISONREF**.
 - **On a(n)...basis**: There seems to be an event-modifying construction **on a(n) MODIFIER basis** where the modifier phrase reflects the scene role being filled. We use **MANNER** as the function:
- (174) a. The legislation was passed **on_a_** bipartisan _basis. (**MANNER**)
b. I see them **on_a_** daily _basis. (**FREQUENCY**→**MANNER**) [also (49)]

See also: **MEANS**, **CHARACTERISTIC**, **COMPARISONREF**.

History. In v1, **MANNER** was positioned as an ancestor of all categories that license a *How?* question, including **INSTRUMENT**, **MEANS**, and **CONTOUR**, as in (138). This criterion was deemed too broad, so **MANNER** has no subtypes in v2.

2.6 EXPLANATION

Assertion of **why** something happens or is the case.

This marks a secondary event that is asserted as the reason for the main event or state.

- (175) I went outside **because_of** the smell.
(176) The rain is **due_to** a cold front.
(177) He reacted **out_of** anger. (EXPLANATION \leadsto SOURCE)
(178) a. He thanked her **for** the cookies.
b. Thank you **for** being so helpful.

When a preposition like **after** is used and the relation is temporal as well as causal, construal captures the overlap. While **since** and **as** can also be temporal, there are tokens where they cannot be paraphrased respectively with **after** and *when*:

- (179) I joined a protest **after** the shameful vote in Congress. (EXPLANATION \leadsto TIME)
(180) Her popularity has grown **since** she announced a bid for president. (EXPLANATION \leadsto TIME)
(181) I will appoint him **since** he is most qualified for the job. (EXPLANATION)
as
#after
#when

Question test: EXPLANATION and its subtype PURPOSE license *Why?* questions.

2.6.1 PURPOSE

A desired outcome presented as contingent on some event, situation, entity, or resource. The PURPOSE may be specific (e.g., an outcome that somebody tries to achieve by performing an action) or generic (e.g., an entity that was designed for or incidentally provides some affordance).

Central usages of PURPOSE explain the motivation behind (hence subtype of EXPLANATION) an action; the action serves as a means for achieving or facilitating the PURPOSE. Yet it is possible to complete the action without realizing the purpose.

Prototypical markers include **for** and infinitive marker **to**:

- Something directly manipulated/affected can stand in metonymically for the desired event:

- Less central usages present a potentially desirable outcome that could be brought about thanks to the availability of an entity, such as a tool, facility, or expendable resource.¹⁵

- However, this category *excludes* infinitival complements of modal and aspectual predicates *that lack a direct object*:

- The following tests help to clarify the boundaries of **PURPOSE**:

2. If a relation can be phrased as **for THE PURPOSE OF NP**, or **for THE PURPOSE OF <inferred verb> NP** (provided that the meaning is not better captured by another label, e.g. **BENEFICIARY**), or **that <someone> INTENDS to VP**, it is a **PURPOSE**.

31

- (187) a. I arrived **for** (THE PURPOSE OF) the movie.
 b. I need \$10 **for** (THE PURPOSE OF seeing) the movie.
 c. I went to the store **for** (THE PURPOSE OF buying) eggs.
 d. a couch **for** (THE PURPOSE OF) sleeping on
 e. a couch **to** sleep on ⇒ a couch **for** THE PURPOSE OF sleeping on
 f. I found a party (that I INTEND) **to** attend

Be careful, however, with inserting an inferred verb, as sometimes it is better captured by another label:

- (188) a. I babysat **for** (THE PURPOSE OF helping) my aunt and uncle (= as a favor) (**BENEFICIARY**)
 b. I made a cake **for** (THE PURPOSE OF celebrating) your birthday (= on the occasion of your birthday) (**CIRCUMSTANCE**)

3. If a relation can be phrased as **NP is good/bad for V-ing**, it is a **PURPOSE**.¹⁶

- (189) a. This is a good gym **to** lift weights at.
 ⇒ This is a good gym **for** (lifting) weights.
 ⇒ This gym is good **for** (lifting) weights.
 b. This cleaner is good **for** (cleaning) hardwood floors.

4. An infinitival modifier of an indefinite pronoun (*anything, someone*) or vague noun (*thing, stuff*) is **PURPOSE** if the pronoun or vague noun has an entity referent that is involved in the infinitival event.

- (190) a. I can't think of anybody/a single person **to** ask.
 b. I found something **to** eat.

- (191) I found something **to** do. (*something/stuff* does not refer to an entity) (**i**)
 stuff

5. An infinitive clause not meeting the above criteria may express the **result** of an event, in which case the appropriate label is **GOAL**: see (129).

6. Many uses of infinitives are not purposes, including complements of modal/aspectual predicates that lack a direct object (185), and syntactic constructions like clausal subjects and certain clefts:

- (192) a. **To** see the movie is a joy. (**i**)
 b. It is fun **to** see the movie. (**i**)

¹⁶The positive or negative evaluation is being delimited to a particular purpose: (189a) is not claiming the gym is good *in general*, just with respect to lifting weights.

Commercial services. A special qualification to the above tests applies to commercial scenes (*buying, paying, hiring, costing*, etc.): for explicitly commercial scenes,¹⁷ if the **PURPOSE** tests pass, the appropriate label is **THEME**~**PURPOSE**. This expresses that the **PURPOSE** is not merely a desired outcome, but is actually promised and paid for in a transaction:

- (193) a. It costs \$10 **to** see the movie. (THEME \leadsto PURPOSE)
b. I hired John **to** fix the problem. (THEME \leadsto PURPOSE)

See additional examples at (220) under **THEME**.

Sufficiency and excess. Expressions of sufficiency/excess with an infinitival that passes the above tests for **PURPOSE** are labeled **COMPARISONREF** \rightsquigarrow **PURPOSE**.

- (194) a bag large enough **for** the groceries (COMPARISONREF \leadsto PURPOSE)
to hold
 \Rightarrow a bag large enough **for** (THE PURPOSE OF holding) the groceries

Sufficiency/excess usages failing the tests are **COMPARISONREF** \leadsto **GOAL**, as this is similar to how an infinitival can express a result—cf. (129) under **GOAL**:

- (195) a forest canopy too dense **to** admit sunlight (COMPARISONREF \rightsquigarrow GOAL)
- a. *a forest canopy too dense in order to admit sunlight
 - b. *a forest canopy too dense for the purpose of admitting sunlight [would imply that somebody was trying to admit sunlight]

There is additional discussion under [COMPARISONREF](#).

Versus CIRCUMSTANCE for ritualized occasions. PURPOSE applies to **for** when it marks a ritualized activity such as a meal or holiday/commemoration for which the main event describes a **preparation** stage:

- (196) **PURPOSE:**
- a. I walked to this restaurant **for** dinner. [walking is not a part of dinner]
 - b. I bought food **for** dinner.
 - c. We saved money **for** our annual vacation.

However, if the activity marked by **for** is interpreted as **containing** the main event, then we use **CIRCUMSTANCE**:

- (197) CIRCUMSTANCE:

¹⁷A more general predicate such as *give*, *need*, or *request* is not considered to evoke a commercial scene, even if it involves money exchanged for a service.

- a. We ate there **for** dinner.
- b. I received a new bicycle **for** Christmas.
- c. I always drink eggnog **for** Christmas. [at and in celebration of Christmastime]
- d. We were wearing costumes **for** Halloween.

If in doubt, **CIRCUMSTANCE** is broader: e.g., *We went there **for** dinner* if *went* is ambiguous between journeying and attending.

History. In v1, the usages illustrated in (184) were assigned a separate label, **FUNCTION**, which inherited from both **ATTRIBUTE** and **PURPOSE**. With the introduction of construal, v2.0–v2.3 labeled these **CHARACTERISTIC**→**PURPOSE**. As of v2.4 this distinction has been abandoned, as it was inconsistent with the policies for spatial and temporal labels: now purposes of entities are simply **PURPOSE**.

3 **PARTICIPANT**

Thing, usually an entity, that plays a causal role in an event.

Not used directly—see subtypes.

3.1 **CAUSER**

Instigator of, and a core participant in, an event.

CAUSER is applied directly to inanimate things or forces conceptualized as entities, such as in a passive **by**-phrase (§6.2):

(198) the devastation of_{THEME} the town wreaked **by** the fire

(199) **CAUSER**→**GESTALT**:

- a. the devastation **of** the fire on_{THEME} the town
- b. the fire's devastation of_{THEME} the town

The **CAUSER** is sometimes construed as a **SOURCE**:

(200) **CAUSER**→**SOURCE**:

- a. the devastation **from** the fire
- b. fatalities **from** cancer
- c. FDR suffered **from** polio.

See also: **INSTRUMENT**

3.1.1.1 AGENT

Animate instigator of an action (typically volitional).

This is most directly associated with the passive **by**-phrase (§6.2), but also permits other construals:

(201) the decisive vote **by** the City Council

(202) AGENT→GESTALT:

- a. the decisive vote **of** the City Council
- b. the City Council's decisive vote
- c. the president's achievements
- d. they needed Joan's help

When two symmetric AGENTs are collected in a single NP functioning as a set, it is marked as a WHOLE construal:

(203) There was a war **between** France and Spain. (AGENT→WHOLE)

(204) a discussion **among** the board members (AGENT→WHOLE)

Compare: CO-AGENT; see also: ORGROLE, ORIGINATOR, SOURCE, STIMULUS

Co-AGENT

Second semantically core participant that would otherwise be labeled AGENT, but which is adpositionally marked in contrast with an AGENT occupying a non-oblique syntactic position (subject or object). Typically, the AGENT and Co-AGENT engage in the event in a reciprocal fashion.

(205) I fought in a war **against** the Germans.

(206) I talked **with** my roommate about cleaning duties.
argued

See also: ACCOMPANIER, SOCIALREL

3.2 THEME

Undergoer that is a semantically core participant in an event or state, and that does not meet the criteria for any other label.

Prototypical **THEMES** undergo (nonagentive¹⁸) motion, are transferred, or undergo an internal change of state (sometimes called *patients*). Adpositional **THEMES** are usually, but not always, construed as something else:

- (207) a. Quit **with** the whining!
b. She helped me **with** my taxes.
c. Don't bother **with** an extra trip.
waste time
d. I managed to cope **with** the heavy load .
my fear of heights
- (208) There's nothing wrong **with** the engine.
- (209) Fill the bowl **with** water. (**THEME**→**INSTRUMENT**)
- (210) a. The food was covered **with** grease. (**THEME**→**INSTRUMENT**)
b. The food was covered **in** grease. (**THEME**→**LOCUS**)
- (211) My hovercraft is full **of** eels.
- (212) a copy **of** the key
- (213) a. Sheldukher looked **for** his laser pistol.
searched
fumbled
[contrast with transitive verb plus **CHARACTERISTIC** in (356)]
b. Sheldukher asked **for** his laser pistol.
made a request
c. There is a significant demand **for** new housing.
d. Let's wait **for** Steve .
more information
the end of the party
- (214) a. What happened **to** you?
b. This species is specific/native **to** North America.
c. Balancing of risk and reward is inherent **to** the game.
d. The mechanic made a repair **to** the engine. (**THEME**→**GOAL**)

¹⁸We distinguish agentivity at the token level, unlike VerbNet, where the subject of motion verbs like *arrive* is **THEME** because it need not be agentive.

- e. Due to my injury, I am limited **to** working from home. (THEME \leadsto GOAL)
constrained
restricted
- f. It is important to adhere/keep/stick **to** your convictions. (THEME \leadsto GOAL)
- (215) THEME THEME \leadsto GESTALT
- a. the approach **of** the waves the waves' approach
- b. the death **of** a salesman the salesman's death
murder murder
- (216) Someone in relation to a time period of their life:
- a. **my** time in grad school (THEME \leadsto GESTALT)
- b. I've never seen that in **my** life (THEME \leadsto GESTALT)
- (217) a. The mechanic worked **on** the engine.
- b. We noshed **on** snacks.
- c. They spent \$500 **on** the bicycle. (POSSESSION \leadsto THEME) [see POSSESSION]
- (218) a. There was an increase **in** oil prices.
- b. Bad weather may result **in** a delay.
- c. I'm covered **in** bees! (THEME \leadsto LOCUS)
- d. I put a hole **in** the box. (= punctured the box) (THEME \leadsto LOCUS)
- (219) a. The training saved us **from** almost certain death. (THEME \leadsto SOURCE)
- b. They prevented us **from** boarding the plane. (THEME \leadsto SOURCE)

- (220) Services:
- a. They spent \$500 **on** the repairs. (THEME)
 - b. They charged/asked/paid/owed \$500 **for** the repairs. (THEME \leadsto PURPOSE)
 - c. \$500 **for** the repairs was excessive. (THEME \leadsto PURPOSE)
to make

Between and among. When two symmetric undergoers are collected in a single NP functioning as a set, it is marked as a **WHOLE** construal:

(221) There was a collision in mid-air **between** two light aircraft. (**THEME**→**WHOLE**)

(222) Links **between** science and industry are important. (**LOCUS**→**WHOLE**)

History. In v1, following many thematic role inventories, **PATIENT** was a distinct label for undergoers that were affected (undergoing an internal change of state). It was merged into **THEME** for v2 because the affectedness criterion can be subtle and difficult to apply.

Compare: **CO-THEME**

See also: **BENEFICIARY**

3.2.1 **CO-THEME**

Second semantically core undergoer that would otherwise be labeled **THEME**, but which is adpositionally marked in contrast with a **THEME** occupying a non-oblique syntactic position (subject or object).

Often, the **THEME** and the **CO-THEME** are similarly situated entities—rather than one being more figure-like and the other more ground-like—but the **CO-THEME** is an oblique (adpositionally marked) argument. This includes concrete scenes of combination, attachment, separation, and substitution of two similar entities.

(223) a. His bicycle collided **with** hers.

b. Combine butter **with** vanilla.

(224) a. They replaced my old tires **with** new ones. [replacement]

b. They substituted new tires **for** my old ones. [replacee]

(225) a. The boys were separated **from** the girls. (**CO-THEME**→**SOURCE**)

b. Keep the dogs **from** the cats. (**CO-THEME**→**SOURCE**)

c. The shin bone is connected **to** the knee bone. (**CO-THEME**→**GOAL**)

By contrast, for similar scenes where the oblique argument is a ground-like entity (larger, less dynamic, more locational, etc. than the **THEME**), that entity is typically a **LOCUS**, **SOURCE**, or **GOAL**:

(226) Dynamic:

- a. Add vanilla **to** the mixture. (GOAL)
- b. Stir vanilla **into** the mixture. (GOAL)
- c. Detach the cable **from** the wall. (SOURCE)

(227) Static:

- a. The cable is attached **to** the wall. (LOCUS→GOAL)
connects
- b. Protesters were kept **from** the area. (LOCUS→SOURCE) [repeated:
missing
(93)]

For creation or transformation of a whole entity (or a group of entities, such as ingredients) into another entity, SOURCE applies to the initial entity and GOAL to the result.

With abstract scenes, CO-THEME is sometimes needed because another argument would be THEME—e.g. 2-argument adjectives:

- (228)
- a. You shouldn't confuse/associate Mozart **with** Rossini. (CO-THEME)
 - b. We are ready/eligible/due **for** an upgrade. (CO-THEME→PURPOSE)
 - c. They prevented us **from** entering. (CO-THEME→SOURCE)

History. In v1, CO-PATIENT was a distinct label, and the two shared a common supertype, CO-PARTICIPANT. See note at THEME.

See also: INSTEADOF, CO-AGENT

3.2.2 TOPIC

Information content or subject matter in communication or cognition, or the matter something pertains to.

A variety of prepositions—including the vast majority of occurrences of **about**—can mark a TOPIC. The following subclasses warrant TOPIC as the scene role:

- **Communication** scenes: the content or subject matter of speech, writing, art, performance, etc.

- (229)
- a. I gave a presentation **about/on** politics.
spoke
 - b. They wouldn't stop arguing **over** the plan.
 - c. I was accused **of** treason.
 - d. a picture **of** Whistler's mother

- e. three copies **of** the test
versions
 - f. **TOPIC**→**IDENTITY**—see discussion at **IDENTITY**:
 - i. the topic/issue/question **of** semantics
 - ii. the idea **of** raising money
 - g. The ratings **for** this film are atrocious.
reviews
 - h. I did not hazard a guess **as_to** the cause.
- **Cognition** scenes: the content or subject matter of thought and knowledge—belief, opinion, decision, learning, study, interest, expertise, skill, etc.
 - (230) a. Try not to think **about** it.
 - b. We took a minute to think **over** the situation.
ponder
 - c. I plan **on** going again.
 - d. I am focused **on** the task at hand.
 - e. There is not enough research **on** the effects of global warming.
 - f. She was dumbfounded **as_to** why the police had done that.
 - g. Think **of** all the possibilities!
 - h. I have no memory **of** the incident.
 - i. I am aware **of** the problem.
 - j. You can have your choice **of** chicken or fish.
 - k. I disagree **with** that statement.
 - l. I am familiar **with** this topic.
 - m. Are you interested **in** politics?
 - n. I'm confident **in** your abilities.
 - (231) a. My daughter excels **in** sports.
at
 - b. I'm an expert **at** baking cookies.
talented
good
 - c. I wouldn't hesitate **in** seeing a doctor.
[but see (3) under **CIRCUMSTANCE**, which is syntactically parallel]
 - Relations of **regard**: the entity, issue, or aspect that the governing predicate pertains to. The relation to the governor may be somewhat loose, skirting the boundary between semantics and information structure.

- (232)
- a. Be reasonable **with** your expectations!
 - b. They are transparent **with** their fee.
 - c. The discount should apply **with** other restaurants too.
 - d. I approached the manager **about** the poor service. [implied communication]
 - e. I am a big baby **about** needles. [implied cognition]
 - f. The owner wouldn't budge **on** the price.
 - g. They came through **on** all of their promises.
 - h. She did not do the right thing **for** an item that was marked incorrectly.
 - i. I'm fast **at** baking cookies. [cf. (231b)]
 - j. They have almost anything you could want **when_it_comes_to**
in_terms_of
spy and surveillance equipment .

A few specific governors merit further discussion:

agree.

- (233)
- a. Let us agree **on** the deal. (TOPIC)
 - b. Let us agree **to** the deal. (TOPIC→GOAL)

answer, respond, etc.

- (234) TOPIC→GOAL:
- a. the answer **to** the question
 - b. my response **to** your question

For *respond with* and similar, it depends whether the object is an action, a device facilitating communication, or some aspect of transferred information:

- (235)
- a. He responded to my kick **with** a punch. (MEANS)
 - b. He responded to my accusation **with** a lawsuit. (MEANS)
 - c. He responded to my accusation **with** dishonest emails. (INSTRUMENT)
 - d. He responded to my accusation **with** falsehoods. (TOPIC)

problem with, experience with, etc. These are simply **TOPIC**:

- (236) a. There was a problem **with** mice in the basement.
 We had
 b. I have limited experience **with** numerical methods.
 c. I had a bad experience **with** a vampire.
 my bad experience

See also: **STIMULUS**

History. Previously, **ACTIVITY** covered usages such as in (231), but such usages were found to be infrequent and **ACTIVITY** was deemed too narrow.

3.3 **STIMULUS**

That which is perceived or experienced (bodily, perceptually, or emotionally).

STIMULUS does not seem to have any prototypical adposition in the languages we have looked at. In English, it can be construed in several ways:

- (237) My affection **for** you (**STIMULUS**→**BENEFICIARY**)
- (238) Scared **by** the bear (**STIMULUS**→**CAUSER**)
- (239) You should listen **to** the music. (**STIMULUS**→**GOAL**)
 pay attention
- (240) **STIMULUS**→**DIRECTION**:
- a. We were looking **at** the photo.
- b. I was angry **at** him. [cf. (241e)]
- c. I startled **at** the noise.
- (241) **STIMULUS**→**TOPIC** is assigned to cases where the PP describes the topic or content of one's emotion:
- a. I care **about** you.
- b. That's what I love **about** the show.
- c. I took_pride **in** the results.
- d. I was proud **of** the results.
 happy **with**
- e. I was angry **with** him. [cf. (240b)]
- f. I was in **CHARACTERISTIC**→**LOCUS** love **with** him. [cf. (371a)]
- g. They bored me **with** their incessant talk about cats.

- (242) **STIMULUS**→**BENEFICIARY**:
- a. Her disdain **for** customers was apparent.
 - b. He has/feels compassion **towards** animals.
- for**
- (243) I am thankful **for** your help. (**STIMULUS**→**EXPLANATION**)
grateful

See also: **TOPIC**, **BENEFICIARY**
Counterpart: **EXPERIENCER**

3.4 **EXPERIENCER**

Animate who is aware of a bodily sensation, perception, emotion, or mental state.

EXPERIENCER does not seem to have any prototypical adposition in the languages we have looked at. In English, it can be construed in several ways:

- (244) a. The anger **of** the students (**EXPERIENCER**→**GESTALT**)
- b. The students' anger (**EXPERIENCER**→**GESTALT**)
- (245) a. Running is enjoyable **for** me (**EXPERIENCER**→**BENEFICIARY**)
- b. The pizza was (too) salty **for** me (**EXPERIENCER**→**BENEFICIARY**)
- (246) a. It feels hot **to** me (**EXPERIENCER**→**GOAL**)
- b. That was astounding **to** me (**EXPERIENCER**→**GOAL**)
- c. This is **my** favorite movie (**EXPERIENCER**→**GESTALT**)
- (247) a. The answer is known **by** me (**EXPERIENCER**→**AGENT**)
- b. The answer is known **to** me (**EXPERIENCER**→**GOAL**)
- c. That is **my** opinion (**EXPERIENCER**→**GESTALT**)
- d. That was **my** experience (**EXPERIENCER**→**GESTALT**)

Bodily events with an **EXPERIENCER** are limited to **perceptions** like seeing and hearing, and **sensations** such as pain and hunger. The undergoer of an involuntary bodily event like sneezing, bleeding, falling asleep, breaking a limb, or dying would instead be a **THEME**, as these events are primarily physical in nature.

One whose **mental state** (including events of knowledge, memory, belief, desire, intention) or **emotion** is described is an **EXPERIENCER**. However, the individual is an **AGENT** if exhibiting or acting on their thoughts/emotions, even internally (e.g. making a decision).

Less canonically, **EXPERIENCER** applies to semi-pragmatic usages meaning ‘from the perspective of’:¹⁹

- (248) a. **For** John, the party was not fun at all. (**EXPERIENCER**→**BENEFICIARY**)
 b. **For** John, there was no reason to attend. (**EXPERIENCER**→**BENEFICIARY**)

Elsewhere, the term *cognizer* is sometimes used for one whose mental state is described.

Counterpart: **STIMULUS**

3.5 **ORIGINATOR**

Animate who is the initial possessor or creator/producer of something, including the speaker/communicator of information. Excludes events where transfer/communication is not framed as unidirectional.

A “source” in the broadest sense of a starting point/condition. Contrasts with **RECIPIENT** if there is transfer/communication.

English construals:²⁰

- (249) **ORIGINATOR**→**AGENT** (passive-**by** or adnominal **by**):
 a. works **by** Shakespeare [cf. (250a, 251a)]
 b. The telephone was invented **by** Alexander Graham Bell.
 c. The story was given to **RECIPIENT**→**GOAL** her **by** her editor.
 told
- (250) **ORIGINATOR**→**SOURCE**:
 a. works **of** Shakespeare [cf. (249a, 251a)]
 b. The story was obtained **from** an anonymous White House employee.
 c. I bought it **from** this company.
 d. I heard the news **from** Larry.

¹⁹Interestingly, many uses of **for** carry an information structural association of delimiting the scope of an assertion. *For John, the party was not fun at all* makes no commitment regarding how fun the party was to others. *This food is good for_{PURPOSE} dinner/for_{BENEFICIARY} folks with dietary constraints* and *He is short for_{COMPARISONREF} a basketball player* also have this property. As the present scheme targets semantic relations, it is not equipped to formalize pragmatic aspects of the meaning.

²⁰If we consider subject position as an **AGENT** construal and direct object position as a **THEME** construal, then we can add examples like *She talked to her editor* (**ORIGINATOR**→**AGENT**) and *They robbed her of her life savings* (**ORIGINATOR**→**THEME**). **ORIGINATOR** does not apply to the subject of events like *exchange* or *talk/chat (with)*, which involve a back-and-forth between **AGENT** and **CO-AGENT** (or a plural **AGENT**).

- (251) **ORIGINATOR** \leadsto **GESTALT**:
- a. Shakespeare's works [cf. (250a, 249a)]
 - b. Rodin's sculptures
 - c. the restaurant's food
 - d. John's question
speech

learn from. If the source of learning is an individual (or group of individuals, organization, etc.) who provides information, **ORIGINATOR** \leadsto **SOURCE** applies. Otherwise, it is simply **SOURCE**:

- (252) We learned a lot **from** Miss Zarves. (**ORIGINATOR** \leadsto **SOURCE**)
- (253) We learned a lot **from** that book . (**SOURCE**)
experience

History. **ORIGINATOR** merges v1 labels **DONOR/SPEAKER** and **CREATOR**, which were difficult to distinguish in the case of authorship. **DONOR/SPEAKER** was a subtype of **INITIALLOCATION**, which inherited from **LOCATION** and **SOURCE**. **CREATOR** was a subtype of **AGENT**. Moving **ORIGINATOR** directly under **PARTICIPANT** puts it in a neutral position with respect to its possible construals.

3.6 **RECIPIENT**

The party (usually animate) that is the endpoint of (actual or intended) transfer of a thing or message, becoming the final **POSSESSOR** or **GESTALT**. Excludes events where transfer/communication is not framed as unidirectional.

A “goal” in the broadest sense of an ending point/condition. Contrasts with **ORIGINATOR**.

English construals:²¹

- (254) She gave the story **to** her editor. (**RECIPIENT** \leadsto **GOAL**)
spoke
- (255) What title did you give **to** your essay? [inanimate] (**RECIPIENT** \leadsto **GOAL**)
- (256) news **for** our readers (**RECIPIENT** \leadsto **DIRECTION**)

²¹ If subject position is viewed as an **AGENT** construal, then active subject with a transfer verbs like *get* or *receive* is **RECIPIENT** \leadsto **AGENT**. If direct object position is viewed as a **THEME** construal, then *She informed her editor* are **RECIPIENT** \leadsto **THEME**.

- (257) He is yelling **at** me to get ready! (RECIPIENT \rightsquigarrow DIRECTION²²)
- (258) The news was not well received **by** the White House. (RECIPIENT \rightsquigarrow AGENT)
- (259) Timmy's piano lesson (RECIPIENT \rightsquigarrow GESTALT)
- (260) I'll have to check **with** my supervisor. (RECIPIENT \rightsquigarrow CO-AGENT)

RECIPIENT does not apply to events like *exchange/talk/chat* (**with**), which involve a back-and-forth between AGENT and CO-AGENT (or a plural AGENT subject):

- (261) She swapped stories **with** her friends. (CO-AGENT)
chatted

See also: BENEFICIARY

History. In v1, RECIPIENT was the counterpart to DONOR/SPEAKER: RECIPIENT was a subtype of DESTINATION, which inherited from LOCATION and GOAL. Moving RECIPIENT directly under PARTICIPANT puts it in a neutral position with respect to its possible construals.

3.7 COST

An amount (typically of money) that is linked to an item or service that it pays for/could pay for, or given as the amount earned or owed.

The governor may be an explicit commercial scenario:

- (262) I bought the book **for** \$10.
sold
- (263) I got a refund **of** \$10.
- (264) COST \rightsquigarrow LOCUS:
- The book is priced **at** \$10.
valued
 - I bought it **at** a great price/rate.

Or the COST may be specified as an adjunct with a non-commercial governor:

- (265) You can ride the bus **for** free.
\$1

²²While *yell at* often has a connotation of shouting criticism towards somebody, and criticism would suggest BENEFICIARY, the RECIPIENT aspect of the meaning is more explicit and essential: yelling from a distance at someone does not imply criticism, and criticism about someone who is absent is not yelling at them.

COST is specifically about payment requested in exchange for goods or services (including income and revenue). If an amount of money is simply treated as property given, acquired, or possessed, then **POSSESSION** is appropriate:

- (266) I bestowed the winner **with** a bicycle. (**POSSESSION**) [repeated at **POSSESSION**]
\$100

See discussion of transfer, goods, and services at **POSSESSION** and **THEME**.

History. This category was not present in v1, which had the broader category **VALUE**. VerbNet (Kipper et al., 2008; Palmer et al., 2017) has a similar category called **ASSET**; we chose the name **COST** to emphasize that it describes a relation rather than an entity type (it does not apply to money with a verb like *possess* or *transfer*, for instance).

3.8 **BENEFICIARY**

Animate or personified undergoer that is (potentially) advantaged or disadvantaged by the event or state.

This label does not distinguish the polarity of the relation (helping or hurting, which is sometimes termed *maleficiary*).

- (267) Vote **for** Pedro!
against
- (268) Junk food is bad **for** your health.
- (269) My parrot died **on** me.
- (270) a. These are clothes **for** children.
b. These are children's clothes. (**BENEFICIARY**→**POSSESSOR**)
- (271) Fortunately **for** the turkey's future, he received a presidential pardon.

Specific subclasses include:

- Animate who will potentially experience a benefit or harm as a result of something but is not an experiencer or recipient of the main predicate itself. (May be an experiencer or recipient of the result.)
- Animate target of emotion or behavior, discussed below.
- Animate who someone supports or opposes (e.g., *vote **for***, *cheer **for***, *Hooray **for***).
- Intended user/usee:

- (272) (We sell) clothes **for** children

- (273) a gallows **for** criminals
(274) This is the car **for** you! [advertising idiom]

- Something characterized as good/appropriate (or not) for some kind of **animate user or use**, delimiting the applicability of a descriptor to that kind of individual:

- (275) a. This place is great **for** young children.
b. This is a great place **for** young children.

The first and last items above have analogues with **PURPOSE**. The key difference is that **BENEFICIARY** applies to an animate participant, whereas **PURPOSE** applies to an intended consequence or one of its inanimate participants.

Targets of behavior versus emotion. A preposition can mark an individual in the context of evaluating how someone else is treating them, with a noun or adjective governor. If behavior is more salient than emotion, then **BENEFICIARY** is the scene role. If emotion is highly salient, then **STIMULUS** is the scene role.

- (276) Behavior-focused:
- a. She exhibits rudeness **towards** customers. (BENEFICIARY \rightsquigarrow DIRECTION)
 - b. He is rude **to** women. (BENEFICIARY \rightsquigarrow GOAL)
 condescending
 - c. He is gentle and compassionate **with** animals. (BENEFICIARY \rightsquigarrow THEME)
- (277) Emotion-focused, repeated from (242):
- a. Her disdain **for** customers was apparent. (STIMULUS \rightsquigarrow BENEFICIARY)
 - b. He has/feels compassion **towards** animals. (STIMULUS \rightsquigarrow BENEFICIARY)
for

Note that the emotion-focused examples can describe private emotional states directly, while the behavior-focused examples are behavior-based judgments or inferences about emotional states.

An obligation directed at somebody is analyzed like targeted behavior:

- (278) We have a solemn responsibility **to** our armed forces. (BENEFICIARY \leadsto GOAL)

Similar to the behavior-focused examples, inanimate causes can have the potential to positively or negatively affect somebody. Ability and permission modalities are included here:

- (279) a. The strategy is beneficial **for** investors. (BENEFICIARY)
risky
an option

- b. The strategy is helpful **to** investors. (BENEFICIARY \leadsto GOAL)
 poses a risk
 is available

Versus RECIPIENT. BENEFICIARY applies to the classic English benefactive construction where it is ambiguous between assistance and intended-transfer:

- (280) John baked a cake **for** Mary. [to help Mary out, and/or with the intention of giving her the cake]

However, if transfer (or communication) is the main semantics of the scene and benefit or harm is no more than an inference, then the scene role is RECIPIENT:

- (281) a message **for** my mother (RECIPIENT \leadsto DIRECTION)
 gift
 (282) a package **for** the front office (RECIPIENT \leadsto DIRECTION)

See also: EXPERIENCER, ORGROLE

3.9 INSTRUMENT

An entity that facilitates an action by applying intermediate causal force.

Prototypically, an AGENT intentionally applies the INSTRUMENT with the purpose of achieving a result:

- (283) a. I broke the window **with** a hammer.
 b. I destroyed the argument **with** my words.

Less prototypically, the action could be unintentional:

- (284) I accidentally poked myself in the eye **with** a stick.

The key is that the INSTRUMENT is not sufficiently “independently causal” to instigate the event.

However, to downplay the agency of the individual operating the instrument, the instrument can be placed in a passive **by**-phrase, which construes it as the instigator:

- (285) a. The window was broken **by** the hammer. (INSTRUMENT \leadsto CAUSER)
 b. My headache was alleviated **by** aspirin. (INSTRUMENT \leadsto CAUSER)

Note that the examples in (285) can be rephrased in active voice with the **INSTRUMENT** as the subject.

A device serving as a mode of transportation or medium of communication counts as an **INSTRUMENT**, but is often construed as a **LOCUS** or **PATH**:

- (286) Communicate **by** phone. (INSTRUMENT)
email
- (287) Talk **on** the phone. (INSTRUMENT \rightsquigarrow LOCUS)
- (288) Send it **over** email. (INSTRUMENT \rightsquigarrow PATH)
via
- (289) Travel **by** train. (INSTRUMENT)
- (290) Escape **with** a getaway car. (INSTRUMENT)
- (291) Escape **in** the getaway car. (INSTRUMENT \rightsquigarrow LOCUS)

This includes some expressions which incorporate the **INSTRUMENT** in a noun:

- (292) ride **on** horseback (INSTRUMENT \rightsquigarrow LOCUS)
 (293) hold **at** knifepoint (INSTRUMENT \rightsquigarrow LOCUS)

Other non-prototypical instruments that can be construed as paths include waypoints from **SOURCE** to **GOAL**, and people/organizations serving as intermediaries:

- (294) We flew to London **via** Paris. (INSTRUMENT \rightsquigarrow PATH)
- (295) I found out the news **via** Sharon. (INSTRUMENT \rightsquigarrow PATH)
- (296) Joan bought her house **through** a real estate agent. (SOCIALREL \rightsquigarrow INSTRUMENT)
- (297) For my Honda I always got replacement parts **through** the dealership.
(ORGROLE \rightsquigarrow INSTRUMENT)

Conversely, roadways count as **PATHs** but can be construed as **INSTRUMENTs**:

- (298) Escape **through** the tunnel. (PATH)
- (299) Escape **by** tunnel. (PATH \rightsquigarrow INSTRUMENT)

Compare **MEANS**, which is used for facilitative events rather than entities. See also **TOPIC**.

4 CONFIGURATION

Thing, usually an entity or property, that is involved in a static relationship to some other entity.

Not used directly—see subtypes.

4.1 IDENTITY

A category being ascribed to something, or something belonging to the category denoted by the governor.

Prototypical prepositions are **of** (where the governor is the category) and **as** (where the object is the category):

- (300) the state **of** Washington [as opposed to the city]
- (301) The liberal state **of** Washington has not been receptive to Trump's message.
- (302) **As** a liberal state, Washington has not been receptive to Trump's message.
- (303) I like Bob **as** a colleague. [but not as a friend]
- (304) What a gem **of** a restaurant! [exclamative idiom: both NPs are indefinite]
- (305) the problem/task/hassle **of** raising money
- (306) the age **of** eight
- (307) They did a great job **of** cleaning my windows.
- (308) **TOPIC** \leadsto **IDENTITY**, with a governing noun in the domain of communication or cognition:
 - a. the topic/issue/question **of** semantics
 - b. the idea **of** raising money

Something may be specified with a category in order to disambiguate it (300), or to provide an interpretation or frame of reference with which that entity is to be considered. In some cases, like (308), the category is a *shell noun* (Schmid, 2000) requiring further specification.

Categorizations may be situational rather than permanent/definitional:

- (309) a. She appears **as** Ophelia in *Hamlet*.
- b. He is usually a bartender, but today he is working **as** a waiter.

Paraphrase test: “(thing) IS (category) [in the context of the event]”: “Washington is a liberal state”, “opening a new business is a hassle”, “She is Ophelia”, etc. Note that **as**+category may attach syntactically to a verb, as in (303) and (309), rather than being governed by the item it describes.

If the object of the preposition is a property (as opposed to a category), the scene role is **CHARACTERISTIC**:

(310) Adnominal: **CHARACTERISTIC**→**IDENTITY**

- a. a car **of** high quality
- b. a man **of** honor
- c. a business **of** that sort [contrast with **SPECIES**, §4.2]

(311) Secondary predicate adjective: **CHARACTERISTIC**→**IDENTITY**

- a. She described him **as** sad.
- b. He strikes me **as** sad.

See also: **COMPARISONREF**

History. Generalized from v1, where it was called **INSTANCE** and restricted to the “(category) **of** (thing)” formulation. The relevant usages of **as** were labeled **ATTRIBUTE**.

4.2 **SPECIES**

A category qualified by *sort*, *type*, *kind*, *species*, *breed*, etc. Includes *variety*, *selection*, *range*, *assortment*, etc. meaning ‘many different kinds’.

- (312) a. that sort **of** business
- b. A good type **of** ant to keep is the red ant .
- c. certain strains **of** *Escherichia coli*
- d. Modern breeds **of** these homing pigeons return reliably
- e. Some poor sap applied the wrong brand **of** paint
- f. This store offers a wide selection **of** footstools
- (313) an example **of** Italian Renaissance architecture
the epitome

SPECIES is *not* used if the sort/variety noun is the object rather than the governor:

- (314) a business **of** that sort (**CHARACTERISTIC**)

4.3 GESTALT

Generalized notion of “whole” understood with reference to a component part, possession, set member, or characteristic. See **CHARACTERISTIC**.

GESTALT—the supercategory of **WHOLE** and **POSSESSOR**—applies directly for entities and eventualities which can loosely be conceptualized as containing or possessing something else, but for which neither **WHOLE** nor **POSSESSOR** is a good fit.

Properties. The holder of a property if the property is the governor:

- (315) a. the blueness **of** the sky the sky's blueness
 b. the size **of** the crowd the crowd's size
 c. the price **of** the tea the tea's price
 d. the start time **of** the party the party's start time
 e. the power **of** the president the president's power
- (316) It was the chairman's fault/responsibility/right.
- (317) the restaurant's extensive menu²³ [cf. (352a)]
- (318) a new way **of** thinking
- (319) the amount **of** time allowed [but see (437)]
- (320) the food/service **at** this restaurant (**GESTALT**→**LOCUS**)

By extension, a possessor of an item in relation to an attribute of that item is **GESTALT**:

- (321) **my** odometer number (= my car's odometer's number) [contrast (328)]

The property may be a fact or detail conventionally associated with someone in life for which there is no more specific role:

- (322) **my** address; **my** price range; **my** home team; **my** career; **my** record of accomplishments

²³The word *menu* (literally an information artifact) can be read as standing metonymically for the dishes available for order, to be created and served by the restaurant. Semantically, the restaurant frame defines various specific actions/relationships involving the menu and items on it. **GESTALT** is highly general and therefore an appropriate selection when none of these particular actions or relationships are in focus.

Containers. The construal **LOCUS**→**GESTALT** is used for a container denoted by the governor:

(323) the room's 2 beds (**LOCUS**→**GESTALT**)

Discourse-associated item. A referent temporarily associated with another referent in the discourse and used to help identify it:

(324) Sam's dog (= the dog that Sam mentioned seeing earlier in the conversation)

Other possessive constructions. **GESTALT** is the construal for many uses of possessive syntax where the semantic criteria for **POSSESSOR** are not met. For instance, s-genitive marking of participant roles (**AGENT**, **EXPERIENCER**, etc.) are analyzed with **GESTALT** as the function. Moreover, the s-genitive construction, unlike **of**, is never analyzed with **WHOLE** as the function, so **WHOLE**→**GESTALT** is used. See §6.1 for discussion of possessive constructions.

4.3.1 **POSSESSOR**

Animate party that has a piece of **property** (something potentially with monetary value: the **POSSESSION**) on a permanent or temporary basis. The **POSSESSION** must be *alienable*, i.e. not a part or attribute of the **POSSESSOR**.

Prototypically expressed with the *s-genitive* (§6.1: 's and possessive pronouns), and **of** (the *of-genitive*):

- (325) a. the house **of** the Smith family the Smith family's house
 b. the corgis **of** Queen Elizabeth Queen Elizabeth's corgis

POSSESSOR is not limited to cases of *ownership*, but also includes temporary forms of possession, such when something is on loan to or under the control of the possessor. The **POSSESSOR** may be *borrowing*, *renting*, *wearing*, or *holding* the property:

- (326) John's hotel room [the room John is staying in as a guest]
 (327) Mary's delivery truck [the company truck that Mary drives as an employee]

There may be an implicit piece of property of which the stated item is a part:

- (328) **My** windshield (= the windshield of my vehicle) is foggy. [contrast (321)]

A wearer of attire may be construed in multiple ways:

- (329) the cloak **of** He-Who-Must-Not-Be-Named He-Who-Must-Not-Be-Named's cloak
- (330) the cloak **on** He-Who-Must-Not-Be-Named (**POSSESSOR**→**LOCUS**)

Pets, by default, are treated as property rather than family members (325b).

Abstract possession. For **POSSESSOR/POSSESSION** to apply to an abstract piece of property, the property must be a commodity in the financial/commercial domain, or information stored externally to the **POSSESSOR** in physical or electronic media.

- (331) Commodity:
- a. **my** shares of stock
 - b. **my** insurance (= insurance that I “own”)
- (332) Stored information:
- a. **my** computer file
 - b. **my** website
 - c. the campaign's email list
 - d. **my** contract

This excludes other abstract notions that can be metaphorically possessed or transferred:

- (333) a. the president's power (**GESTALT**)
- b. **my** memories of childhood (**EXPERIENCER**→**GESTALT**)

Creation or transfer of an item. **ORIGINATOR** should be preferred as the scene role wherever it is clear that the party in question created the item:

- (334) Rodin's sculptures (**ORIGINATOR**→**GESTALT**) [(251b)]
- (335) the restaurant's food (**ORIGINATOR**→**GESTALT**) [(251c)]

In cases of *explicit* transfer, the initial possessor of something is labeled **ORIGINATOR**, and the final possessor of something transferred is the **RECIPIENT**. However, when there is a possessed item whose transfer is merely assumed from context or world knowledge (and the party in question is not the creator), default to **POSSESSOR**:

- (336) The shopkeeper's merchandise is fantastic. [item to be sold]
store's
- (337) Waiter, is **my** food ready? [item identified or ordered for purchase]

- (338) Use **my** money (the money that I gave you) wisely! [item that was transferred]

Possessed nouns like *gift* and *contribution* that refer to an entity but lexically imply a previous transfer event should be **POSSESSOR** unless another argument of the noun disambiguates **ORIGINATOR** vs. **RECIPIENT** by process of elimination:

- (339) a. That was **my** gift. (**POSSESSOR**)
 b. That was **my** gift to_{RECIPIENT}→_{GOAL} John. (**ORIGINATOR**→**GESTALT**)
 c. That was **my** gift from_{ORIGINATOR}→_{SOURCE} Mary. (**RECIPIENT**→**GESTALT**)

Communication. Communicative acts are treated as transfer of information, and thus **ORIGINATOR** and **RECIPIENT** apply to the communicator and addressee, respectively.

See also **ACCOMPANIER**, **BENEFICIARY**, **ORGRole**, and §6.1: Genitives/Possessives.

4.3.2 **WHOLE**

Something described with respect to its part, portion, subevent, subset, or set element. See **PARTPORTION**.

- | | |
|---|--|
| <p>(340) WHOLE</p> <p>a. the new engine of the car</p> <p>b. the flaxen hair of the girl</p> <p>c. the body of Lord Voldemort</p> <p>d. the 3 layers of the cake</p> <p>e. the 3 prongs of the strategy</p> <p>f. the tastiest bit of the cake</p> <p>g. the southern tip of the island</p> <p>h. the interior of the shopping bag</p> <p>i. the end of the journey</p> <p>j. the 14 episodes of a TV series</p> | <p>WHOLE→GESTALT</p> <p>the car's new engine</p> <p>the girl's flaxen hair</p> <p>Lord Voldemort's body</p> <p>the cake's 3 layers</p> <p>the strategy's 3 prongs</p> <p>the cake's tastiest bit</p> <p>the island's southern tip</p> <p>the shopping bag's interior</p> <p>the journey's end</p> <p>a TV series's 14 episodes</p> |
| <p>(341) the south of France</p> | |
| <p>(342) The remainder of the cake
rest</p> | |
| <p>(343) WHOLE→LOCUS:</p> <p>a. the 14 episodes in a TV series</p> | |

- b. the new engine **in** the car
- c. the escape key **on** the keyboard
- d. the flaxen hair **on** the girl
- (344) the clothes **in** that pile are dirty (**WHOLE**→**LOCUS**)
- (345) There are several options to choose **from**. (**WHOLE**→**SOURCE**)
- (346) Sets and ratios:
 - a. This is one **of** the worst restaurants in town. (**WHOLE**)
better
 - b. 2 **in** 10 American children are redheads. (**WHOLE**→**LOCUS**)
 - c. 2 **out_of** 10 American children are redheads. (**WHOLE**→**SOURCE**)
 - d. **Out_of** the 10 children in the class, only Mary is a redhead. (**WHOLE**→**SOURCE**)
 - e. **Among** the 10 children in the class, only Mary is a redhead. (**WHOLE**)

If the governor narrows the reference to a certain amount of the **WHOLE**, the construal **QUANTITY**→**WHOLE** is used—see (439). Note that this only applies if the governor is a measure term; it does not apply to distinctive parts like “layers” (340d) and “prongs” (340e), even if a count is specified.

Used to construe geographic and temporal “containers”:

- (347) Famous castles **of** the valley (**LOCUS**→**WHOLE**)
- (348) a. the 15th **of** March (**TIME**→**WHOLE**)
Ides
- b. March **of** 44 BC (**TIME**→**WHOLE**)

The prepositions **between** and **among** can impose **WHOLE** construals by combining two or more items in the object NP (contrast with (346e)):

- (349) The negotiations **between** the parties went well. (**AGENT**→**WHOLE**)
among
- (349') The negotiations **by** the parties went well. (**AGENT**)

History. In v1, **SUPERSET** was distinguished as a subtype of **WHOLE** for examples such as (346), but the distinction was dropped for v2 (as was **ELEMENTS**: see **PART-PORITION**).

4.4 CHARACTERISTIC

Generalized notion of a part, feature/property/attribute name or value, qualitative state/condition, possession, or the contents or composition of something, understood with respect to that thing (the **GESTALT**).

Labels **POSSESSION**, **PARTPORTION**, and its subtype **STUFF** are defined for some important subclasses.

CHARACTERISTIC applies directly to:

- A property value:
 - (350) Adnominal: **CHARACTERISTIC**~>**IDENTITY**
 - a. a car **of** high quality
 - b. a man **of** honor
 - c. a business **of** that sort [contrast with **SPECIES**, §4.2]
 - (351) Secondary predicate adjective: **CHARACTERISTIC**~>**IDENTITY**
 - a. She described him **as** sad.
 - b. He strikes me **as** sad.
- Role of a complex frame **GESTALT** that has no obvious decomposition into parts:
 - (352) a. the restaurant **with** a convenient location [cf. (317)]
an extensive menu
 - b. a party **with** great music
- That which is located in a container denoted by the governor:
 - (353) a room **with** 2 beds [beds are among the things in the room]
 - (354) **CHARACTERISTIC**~>**STUFF** where the object of the preposition is construed as describing the contents in their entirety:
 - a. a shelf **of** rare books
 - b. a cardboard box **of** snacks
- With a transitive verb like *search*, *examine*, or *test*, the attribute of the **THEME** that is being examined:
 - (355) He examined the vase **for** damage.
 - (356) He searched the room **for** his laser pistol. [contrast intransitive **THEME**, (213a)]

(357) He was tested **for** low blood sugar.

- The scale or dimension by which items are compared:

(358) The children are sorted **by** height
screened

- (359) a. She exceeds him **in** height
b. There is no difference **in** height

- The **form or shape** that an entity takes, or in which elements are arranged. This includes language of communication within an information source:

(360) **CHARACTERISTIC**~>**LOCUS**:

- a. The ribbon is (tied) **in** a bow.
b. The sand is **in** a pyramid shape.
c. I skipped lunch for **FREQUENCY** three days **in** a row. [see (51b)]
the third day
d. The book is **in** French. [contrast (167)]
e. music **in** C major

- An adverbial **depictive** characterizing a participant of an event:

(361) She entered the room **in** a stupor. (= she was in a stupor when
drunk
she entered) (**CHARACTERISTIC**~>**LOCUS**) [repeated at **MANNER** for
contrast]

- Anything that is borderline between the **POSSESSION** and **PARTPORTION** subcategories.
- The **state or condition** that an entity is in. The PP or intransitive preposition is used (especially predicatively) to describe a qualitative state or condition of an entity that is not simply a relation of location, time, possession, quantity, causation, etc. between governor and object. For example:

- With the noun *state, condition*, etc.:

(362) **CHARACTERISTIC**~>**LOCUS**:

- a. The chairs are **in** excellent shape.
b. I'm **in** no condition to go outside.

- Bodily/medical conditions presented as applying to the governor:

(363) John is **on** his back . (CHARACTERISTIC \rightsquigarrow LOCUS)
on antibiotics
on the ventilator
in pain
in a coma

- Miscellaneous qualitative senses of specific prepositions used statively:

(364) John is **for** the war. [opinion] (CHARACTERISTIC \rightsquigarrow BENEFICIARY)
against

(365) John is **into** sports. [hobbies/interests] (CHARACTERISTIC \rightsquigarrow GOAL)

- Idiomatic PPs expressing states, for example:²⁴

(366) **on** fire (contrast **in** the fire), **on** time (contrast **at** the time), **in** trouble, **in** love, **in** tune, **in** a hurry, **at** odds, **out_of** business, **out_of** control (CHARACTERISTIC \rightsquigarrow LOCUS)

- Intransitive prepositions expressing a qualitative state (not location, time, etc.):

(367) CHARACTERISTIC \rightsquigarrow LOCUS:

- The lights are **on** . [also at SOURCE for contrast]
off
out
- Political TV shows are **in** . [in fashion]

Contrast intransitive predicative prepositions describing an *event*:

(368) The party tomorrow is **on** . (TEMPORAL \rightsquigarrow LOCUS) [see: TEMPORAL]

A few observations about these state PPs are in order.

1. In a reversal of the usual asymmetry between governor and adpositional object, semantically, the PP defines the kind of scene that the governor participates in. To an extent, this may be true of all predicative PPs, but the state PPs are often such that the object of the preposition is neither an event nor a referential entity. I.e., *John is in a hurry* does not exactly express a relation between the entities *John* and *a hurry*; rather, it expresses something qualitative about the entity *John's* condition.

²⁴Often the object of the preposition is determinerless (*in business*) (Baldwin et al., 2006) or has a fixed determiner (*in a hurry*).

2. The most idiomatic of the state PPs seem to resist questions of the form *What?*+NP-supercategory with a stranded preposition:

(369) More productive prepositional usages:

- a. The party is **in** January. → What month is the party **in**? [Or: When is the party?] (**TIME**)
- b. John is **on** aspirin. → What medication is John **on**?²⁵ (**CHARACTERISTIC**→**LOCUS**)

(370) Less productive/more idiomatic preposition + NP combinations:

- a. John is **in** a hurry. → What _ is John **in**?²⁶ (**CHARACTERISTIC**→**LOCUS**)
a coma
- b. John is **on** fire. → What _ is John **on**? (**CHARACTERISTIC**→**LOCUS**)

3. Typically these states are binary: something is either **on fire**/ **on time**, or not. For some, the negation may be expressed by substituting a contrasting preposition: an orchestra that is not **in tune** is **out_of tune**.

State PPs with complements. The **CHARACTERISTIC**→**LOCUS** construal is also used when there is effectively a preposition+NP+preposition combination that links two arguments:

(371) **CHARACTERISTIC**→**LOCUS**:

- a. John is **in** love (with **STIMULUS**→**TOPIC** Mary). [cf. (241f)]
- b. That is **at** odds with **COMPARISONREF**→**TOPIC** our agreement.

Change-of-state PPs. Note that **CHARACTERISTIC** does not apply to an initial or result state, where **SOURCE** and **GOAL** are the respective scene roles (collapsing the usual state/location distinction):

- (372) John came **out_of** a coma. (**SOURCE**)
- (373) John slipped **into** a coma. (**GOAL**)
- (374) The drugs put John **in** a coma. (**GOAL**→**LOCUS**)
- (375) They chopped the wood **in** pieces. (**GOAL**→**LOCUS**)

For some usages but not all, one of “**GESTALT** {HAS, CONTAINS} **CHARACTERISTIC**” is entailed. This does not help to distinguish subtypes.

²⁵ Or, colloquially, with a suspected mind-altering substance: *What is John on*?

²⁶ *What condition/state is John in*? does work, but is quite vague.

Versus CIRCUMSTANCE. State PPs like *at odds* and *on medication*, which receive the construal **CHARACTERISTIC**→**LOCUS**, are similar to situating events like *at the party* and *on vacation*, which are analyzed as **CIRCUMSTANCE**→**LOCUS**. What matters for the scene role is whether the object of the preposition is an event or not.

Versus MANNER. If a property pertains to an entity—whether that entity is the syntactic governor or not—then **CHARACTERISTIC**. **MANNER** is limited to descriptors of events.

History. The v1 label **ATTRIBUTE** was intended to apply to features of something, but was vaguely defined. With the overhaul of the **CONFIGURATION** subhierarchy, **ATTRIBUTE** has primarily been replaced by **CHARACTERISTIC** and its subtypes and **IDENTITY**.

4.4.1 POSSESSION

Piece of **property** (something potentially with monetary value) that an animate party (the **POSSESSOR**) has on a permanent or temporary basis, or that is transferred between parties. The **POSSESSION** must be *alienable*, i.e. not a part or attribute of the **POSSESSOR**.

The **POSSESSOR** may *own* or may be *borrowing*, *renting*, *wearing*, or *holding* the property.

Prototypical prepositions are **with** and **without**:

- (376) People **with** money
without

There is also a (negated) possession sense of **out/out_of**:

- (377) a. We are **out_of** toilet paper.
 b. Toilet paper? We are **out**.

Attire may be construed in multiple ways:

- (378) the kid **with** a vest (on)
 makeup
 (379) the kid **in** a vest (**POSSESSION**→**LOCUS**)

Immediate concrete possession uses an **ACCOMPANIER** construal:

- (380) Hagrid exited the shop **with** (= carrying) a snowy owl. (**POSSESSION**→**ACCOMPANIER**)

Transfer, goods, and services. In a commercial scene, goods, services, and money are distinguished. **POSSESSION** is used as the scene role for goods for sale. **POSSESSION** also applies to a piece of property transferred between parties, lost, acquired, or carried, even if no money changes hands. **THEME** is the scene role for commercial services. **COST** applies to the money asked, paid, or owed.

The construal **POSSESSION**~**THEME** is used for goods marked by **on**, **for**, etc., whereas **with** can be simple **POSSESSION**:

(381) Simple change of possession and transfer:

- a. I bestowed the winner **with** a bicycle. (**POSSESSION**) [repeated at **COST**]
\$100
- b. They robbed her **of** her life savings. (**POSSESSION**~**THEME**)

(382) Goods:

- a. They spent \$500 **on** the bicycle. (**POSSESSION**~**THEME**) [also at **THEME**]
- b. They charged/asked/paid/owed \$500 **for** the bicycle. (**POSSESSION**~**THEME**)
- c. \$500 **for** the bicycle was excessive. (**POSSESSION**~**THEME**)

Contrast (220) under **THEME**.

Paraphrase test: “**POSSESSOR POSSESSES POSSESSION**”, “**POSSESSOR** is IN **POSSESSION OF POSSESSION**”, or “**POSSESSOR HAS ON POSSESSION**” for stative possession; “**RECIPIENT ACQUIRES POSSESSION**” or “**ORIGINATOR LOSES POSSESSION OF POSSESSION**” for change of possession. “IN **POSSESSION OF**” is especially appropriate for immediate concrete stative possession.

See further discussion at **POSSESSOR**.

4.4.2 **PARTPORTION**

A part, portion, subevent, subset, or set element (e.g., an example or exception) of some **WHOLE**.

Anything directly labeled with **PARTPORTION** is understood to be **incomplete** relative to the **WHOLE**. This includes body parts and partial food ingredients.

Prototypical prepositions include **with**, **without**; **such_as**, **like** for exemplification; and **but**, **except**, **except_for** for exceptions:

- (383)
- a. a car **with** a new engine
 - b. a strategy **with** 3 prongs
 - c. the girl **with** flaxen hair
 - d. a man **with** a wooden leg named Smith

- e. a valley **with** a castle
- f. a quintet **with** 2 cellos
- g. a performance **with** a guitar solo
- h. a cake **with** 3 layers
- i. a sandwich **with** wheat bread
- j. soup **with** carrots (in it)
- k. a chicken sandwich **with** ketchup (on it)

(384) Bread **without** gluten

Some can be paraphrased with INCLUDES, but this is not determinative.

Elements and Exceptions. **PARTPORTION** is used for adpositions marking a member or non-member of a set:

(385) strategies **such_as** divide-and-conquer

(386) Everyone **except/but** Bob plays trombone.

Set-membership can be construed as comparison:

(387) strategies **like** divide-and-conquer [same reading as (385)]
 (**PARTPORTION**~>**COMPARISONREF**)

The set may be an organizational collective:

(388) A piano quintet is a chamber group **with** a piano (in it)
 (**ORGROLE**~>**PARTPORTION**) [repeated at **ORGROLE**]

Diverse Examples. In describing a set or whole, a sort of scanning with **from...to** can be used indicate diversity or coverage of the items/parts:

(389) Everyone **from****PARTPORTION**~>**SOURCE** the peasants **to****PARTPORTION**~>**GOAL** the lord and lady gathered for the feast.

Start with, end with, etc. Along similar lines as (389), **with** can be used with an aspectual verb to indicate an item in a sequence: *start with, continue with, end with*, and similar. Here the scene role **PARTPORTION** applies (though note that it is a part with respect to another argument of the verb, not the verb itself):

(390) **PARTPORTION**~>**MEANS**:

- a. My teacher started the lesson **with** a quiz.
- b. The lesson started **with** a quiz.

(391) The meal started **with** an appetizer. (**PARTPORTION**~>**INSTRUMENT**)

History. In v1, instead of this category, there were separate categories **ELEMENTS** for set members, **COMPARISON/CONTRAST** for exemplification, and **ATTRIBUTE** for other parts (grouped with properties, which are now **GESTALT**). (**SUPERSET** was removed along with **ELEMENTS**: see **WHOLE**.)

STUFF

The members comprising a group/ensemble, or the material comprising some unit of substance. **STUFF** is distinguished from other instances of **PARTPORTION** in fully covering (or “summarizing”) the aggregate whole.

Paraphrase test: “**WHOLE** CONSISTS OF **STUFF**”

- (392) a. A clump **of** sand
b. A piece **of** wood
c. An evening **of** Brahms
d. A meal **of** salmon
- (393) A salad **of** mixed greens
with
- (394) This bottle is **of** beer (and that one is of wine). (**CHARACTERISTIC**→**STUFF**)
[but see (429)]
- (395) A group/throng **of** vacationers (**QUANTITY**→**STUFF**) [governor is collective noun not denoting an organization; more at **QUANTITY**]
- (396) **ORGROLE**→**STUFF**:
a. An order **of** nuns [repeated at **ORGROLE**]
b. A chamber group **of** 5 players [repeated at **ORGROLE**]
with

STUFF has no specific counterpart under **WHOLE**.

4.5 ACCOMPANIER

Entity that another entity is together with.

Sometimes called *comitative*.

Prototypical prepositions are **with**, **without**, **along_with**, **together**, **together_with**, and **in_addition_to**:

- (397) I'll have soup **with** salad.
without

(398) She'll be **with** us in spirit.

'Togetherness' is a subjective concept that goes beyond proximity; contrast (399a) with (399b), which provide slightly different interpretations of the same spatial scene:

- (399) a. The girl is standing **with** her mother. (ACCOMPANIER)
 b. The girl is standing **next_to** her mother. (LOCUS)

For an "extra participant" in an activity, where two parties perform the activity together (but the nature of the activity would not fundamentally change if they each performed it independently), a CO-AGENT construal is used:

(400) Do you want to walk **with** me? (ACCOMPANIER \leadsto CO-AGENT)

By contrast, if the nature of the scene fundamentally requires multiple participants, simple CO-AGENT is used. Often there is ambiguity:²⁷

- (401) Do you want to talk **with** me?
 a. [*The reading*: Should we have a conversation?] (CO-AGENT)
 b. [*The reading*: Do you want to join me in talking to a third party?] (ACCOMPANIER \leadsto CO-AGENT)
- (402) I fought **with** them to reform the regulation.
 a. [*The reading*: I fought against them.] (CO-AGENT)
 b. [*The reading*: I was on the same side as them.] (ACCOMPANIER \leadsto CO-AGENT)

If the object denotes an item that the governor has on hand in their possession, then the construal POSSESSION \leadsto ACCOMPANIER is used:

(403) I walked in **with** an umbrella. (POSSESSION \leadsto ACCOMPANIER)

X_i bring/take/... Y with PRON_i. This construction repeats the subject argument in a **with**-PP, which is analyzed as POSSESSOR \leadsto ACCOMPANIER or ACCOMPANIER depending on whether the scene involves possession (of something non-volitional) or not:

- (404) a. I brought my friend **with** me. (ACCOMPANIER) [emphasizes that the (volitional) friend is accompanying the subject]
 b. I brought my friend.

²⁷ Adding **together** seems to favor the (b) readings: *I fought together with them*, *We fought together* can only mean we were on the same side. Contrastive stress can also force one reading: *I fought WITH them (not AGAINST them)*.

c. Your surname is the_same **as** mine.

(412) Harry had never met anyone quite **like** Luna.

(413) It was **as_if** he had insulted my mother.
like

The comparison is often made with respect to some dimension or attribute, the **CHARACTERISTIC**, which may or may not be scalar. The comparison may be figurative, employing simile, hyperbole, or spatial metaphor (*close to* in the sense of ‘similar to’). The **COMPARISONREF** may even be a desirable or hypothetical/irrealis event or state (*It was **as** it should have been*).

Prototypical prepositions include **than**, **as** (including the second item in the **as-as** construction), **like**, **unlike**. Prominent construals are **to** (**GOAL** for similar-thing) and **from** (**SOURCE** for dissimilar-thing).

LOCUS construal. If something is preferred or appreciated **over** something else, **COMPARISONREF**→**LOCUS** is used:

(414) I prefer this restaurant **over** that one. (**COMPARISONREF**→**LOCUS**)
[paraphrase: I like this restaurant better **than** that one.]

But for scenes of choice and substitution, see **INSTEADOF**.

SOURCE and GOAL construals. Resemblance and equivalence may be expressed with **to**, while difference may be expressed with **from**:

(415) **COMPARISONREF**→**GOAL**:

- a. Shall I compare thee **to** a summer’s day?
- b. Her height is equal **to** mine.

close

(416) **COMPARISONREF**→**SOURCE**:

- a. We need to distinguish what is achievable **from** what is desirable.
- b. Her height is different **from** mine.²⁸

²⁸American English. Interestingly, *different to* occurs in British English.

ACCOMPANIER construal.

(417) Don't compare me **with** my sister! (COMPARISONREF \leadsto ACCOMPANIER)

Category as standard. An indirect comparison can be made by relating something to a category to which it may or may not belong. The category stands for its members or prototypes. For example, in:

(418) He is short **for** a basketball player. (COMPARISONREF)

the category *basketball player* serves as the standard against which *he* is deemed short.

Sufficiency and excess. Sufficiency and excess can be expressed with adverbs (*too, enough, insufficiently*, etc.) and adjectives (*insufficient*) that license a PP or infinitival expressing the consequence.²⁹ For example:

(419) COMPARISONREF \leadsto PURPOSE:

- a. He is too short **for** basketball.
not tall enough **to** play
- b. His height is insufficient **for** basketball.

Playing basketball is the desired outcome, but it is conditional on some scalar property relative to an implicit point on the scale—in (419), a minimum height associated with playing basketball. As a consequence, the desired outcome may or may not be blocked. Thus, the consequence phrase helps to establish a reference point of comparison.

As discussed under PURPOSE, if the consequence phrase in such a construction meets the criteria for purposes, it is labeled COMPARISONREF \leadsto PURPOSE. Otherwise, the non-purpose consequence is labeled COMPARISONREF \leadsto GOAL.

MANNER \leadsto COMPARISONREF construal. This applies to an analogy that describes the *how* of an event (be it agentive or perceptual):

(420) MANNER \leadsto COMPARISONREF:

- a. You eat **like** a pig (eats).
- b. You smell **like** a pig.

However, where an analogy is an external comment on an event rather than filling in a role of the event, it is simply COMPARISONREF. Contrast:

²⁹See the Degree-Consequence construction (Bonial et al., 2018).

- (421) You ate a whole pie **like** my cousin did.
- a. *Role reading*: The way in which you ate a pie was similar. (MAN-
NER \leadsto COMPARISONREF)
 - b. *External comment reading*: You ate a whole pie, and so did my cousin.
(COMPARISONREF)

Analogy and non-analogy readings of like. In descriptions, adverbial **like**, **as_if**, etc. can be ambiguous, especially in a scene of perception. For example:

- (422) This looks **like** a Van Gogh painting.
- a. *Analogy reading*: This looks similar to a Van Gogh painting. (MAN-
NER \leadsto COMPARISONREF)
 - b. *Conclusion reading*: This looks to be a Van Gogh painting (it probably
is one). (THEME \leadsto COMPARISONREF)
- (423) It sounded **like/as_if**
- a. ...he had drunk a gallon of helium. (MANNER \leadsto COMPARISONREF:
analogy reading more likely)
 - b. ...they weren't taking me seriously. (THEME \leadsto COMPARISONREF: con-
clusion reading more likely)

Similarly for *seem like*, *feel like*, etc.

Another ambiguity can arise when **like** occurs with *what* as its extracted object. In the following sentences, the most likely interpretation is not one of analogy between two things, but rather an open-ended description. (*Who does it look like?*, by contrast, implicates an analogy to an individual.) We therefore treat **like what** as a PP idiom, and label it MANNER \leadsto COMPARISONREF:

- (424) MANNER \leadsto COMPARISONREF:
- a. I know what_ Steve looks _**like**. (I know how Steve looks.)
 - b. What_ does her hair look _**like**? (How does her hair look?)
 - c. What_ is the party _**like**? (How is the party?)

A *how*-paraphrase is generally possible, though *how* may suggest a positive or negative evaluation is available, whereas *what* is more neutral.

Contrast unaccusative perception verb + **of** combinations:

- (425) Your father smells **of** elderberries. (MANNER \leadsto STUFF) [also (171)]
The soup tastes

Category exemplars and set members. When governed by an NP naming a category or set, **like** is ambiguous between exemplifying a member, as in (426b) and (427b), and merely indicating similarity, as in (426a) and (427a):

- (426) Colbert frequently promotes comedians **like** himself.
- a. [*Exclusive/restrictive reading: similar to himself (but not including himself)*] (**COMPARISONREF**)
 - b. [*Inclusive/nonrestrictive reading: such as/including himself (he promotes himself, among others)*] (**PARTPORTION**→**COMPARISONREF**)
- (427) a. I don't know anyone else **like** her. [anyone else *similar to* her] (**COMPARISONREF**)
- b. It must be great to have a wonderful doctor **like** her .
she is
 [It must be great to have her because she is a wonderful doctor]
 (**IDENTITY**→**COMPARISONREF**)

4.8 **RATEUNIT**

Unit of measure in a rate expression.

This is for constructions using **per** or **by** to specify a unit:

- (428) a. The cost is \$10 **per** item.
 b. A fuel efficiency of 40 miles **per** gallon (of gas)
 c. Pizza is sold **by** the slice.
 d. They charge **by** the hour.

Paraphrase: The adposition can be paraphrased as “for each/every”.

History. In v1, this fell under VALUE.

4.9 **QUANTITY**

Something measured by a quantity denoted by the governor.

The governor may be a precise or vague count/measurement. This includes nouns like “lack”, “dearth”, “shortage”, “excess”, or “surplus” (meaning a too-small or too-large amount).

Question test: the governor answers “How much/many of (object)?”

The main preposition is **of**.

- Simple **QUANTITY**:

(429) Pour me a bottle('s worth) **of** beer. [but see (394)]

(430) I have 2 years **of** training.

(431) a. I ate 6 ounces **of** cake.

a piece

b. An ounce **of** compassion

(432) There's a dearth **of** cake in the house.

(433) This cake has thousands **of** sprinkles.

(434) They number in the tens **of** thousands.

(435) a. I have a number **of** students.

handful

b. I have a lot **of** students.

c. We did a lot **of** traveling.

d. There is a lot **of** wet sand on the beach.

(436) A pair **of** shoes

- If the measure includes a word like “amount”, “quantity”, or “number”,³⁰ the construal **QUANTITY**→**GESTALT** is used (because the amount of something can be viewed as an attribute):

(437) **QUANTITY**→**GESTALT**:

a. A generous amount **of** time

b. A large number **of** students

But if “amount”, “quantity”, etc. is used without a measure as its modifier, it is simply **GESTALT**: see (319).

- If the governor is a **collective noun** not denoting an organization, the construal **QUANTITY**→**STUFF** is used (note that a “consisting of” paraphrase is possible):

(438) **QUANTITY**→**STUFF**:

a. Can you outrun a herd **of** wildebeest?

b. Put 3 bales **of** hay on the truck.

c. A group **of** vacationers just arrived.

2 groups

A throng

³⁰Excluding the expression “a number” meaning ‘several’, as in (435a).

For organizational collectives, see **ORGR**OLE.

- Otherwise, if the object refers to **a specific item or set**, and the quantity measures a portion of that item (whether a quantifier, absolute measure, or fractional measure), the construal **QUANTITY**→**WHOLE** is used:

(439) **QUANTITY**→**WHOLE**:

- I ate 6 ounces **of** the cake in the refrigerator.
- I ate half **of** the cake.
50%
- All/many/lots/a lot/ **of** the town's residents are students.
some/few/both/none
- I have seen all **of** the city. (= the whole city)
- A lot **of** the sand on the beach is wet.
- 2 **of** the children are redheads.
- 2 **of** the 10 children in the class are redheads.

However, simple **WHOLE** is used if the portion is specified as “the rest”, “the remainder”, etc., as in (342).

4.9.1 **APPROXIMATOR**

An “operator” that semantically takes a measurement, quantity, or range as an argument and “transforms” it in some way into a new measurement, quantity, or range.

For instance:

- (440) We have **about** 3 eggs left.
(441) We have **in_the_vicinity_of** 3 eggs left.
(442) We have **over** 3 eggs left.
(443) We have **between** 3 and 6 eggs left.

Similarly for **around**, **under**, **more_than**, **less_than**, **greater_than**, **fewer_than**, **at_least**, and **at_most**.³¹

³¹These constructions are markedly different from most PPs; it is even questionable whether these usages should count as prepositions. Without getting into the details here, even if their syntactic status is in doubt, we deem it practical to assign them with a semantic label in our inventory because they overlap lexically with “true” prepositions.

4.10 SOCIALREL

Party (individual, group of persons, or institution) with which another party has a stable affiliation.

Typically, **SOCIALREL** applies directly to interpersonal relations (versus the subtype **ORGROLE** for relations involving an organization). It does not have any prototypical adpositions. Construals include:

- (444) a. I work **with** Michael. (**SOCIALREL** \rightsquigarrow **CO-AGENT**)
 b. Joan has a class **with** Miss Zarves. (**SOCIALREL** \rightsquigarrow **CO-AGENT**)
- (445) people **with** children (**SOCIALREL** \rightsquigarrow **CHARACTERISTIC**)
- (446) **SOCIALREL** \rightsquigarrow **GESTALT**
- | | | |
|----|--|--------------------------------|
| a. | Joan is the sister of John.
wife | Joan is John's sister.
wife |
| b. | Joan is a student of Miss Zarves. | Joan is Miss Zarves's student. |
| c. | the rivalry of the teams | the teams' rivalry |
- (447) the rivalry **between** the teams (**SOCIALREL** \rightsquigarrow **WHOLE**) [see (349)]
- (448) Joan is studying **under** Prof. Smith. (**SOCIALREL** \rightsquigarrow **LOCUS**)
- (449) Joan is married **to** John. (**SOCIALREL** \rightsquigarrow **CO-THEME**)
- (450) Joan is divorced **from** John. (**SOCIALREL** \rightsquigarrow **CO-THEME**)
- (451) Joan bought her house **through** a real estate agent. [intermediary] (**SOCIALREL** \rightsquigarrow **INSTRUMENT**)

Note, however, that *work with* is ambiguous between being in an established professional relationship (444a), and engaging temporarily in a joint productive activity:

- (452) I was working **with** Michael after lunch. (Co-AGENT)

It is up to annotators to decide from context which interpretation better fits the context.

History. Renamed from v1 label PROFESSIONALASPECT, which was borrowed from Srikumar and Roth (2013a,b). The name SOCIALREL reflects a broader set of stative relations involving an individual in a social context, including kinship and friendship. See also note under ORGROLE.

4.10.1 ORGROLE

Either party in a relation between an organization/institution and an individual who has a stable affiliation with that organization, such as membership or a business relationship.

Like its supertype **SOCIALREL**, **ORGROLE** lacks any prototypical adposition, but participates in numerous construals:

- (453) **ORGR**OLE \rightsquigarrow **G**ESTALT with the institution as possessor:
- | | | |
|----|----------------------------------|-----------------------|
| a. | the chairman of the board | the board's chairman |
| b. | the president of France | France's president |
| c. | employees of Grunnings | Grunnings's employees |
| | customers | customers |
- (454) **ORGR**OLE \rightsquigarrow **G**ESTALT with possessive marking on the individual:
- my** school/gym [that I attend]
 - my** work [the place where I work]
 - my** landscaping company [that I hired]
 - the family **of** Miss Zarves
 - Miss Zarves's family
- (455) **ORGR**OLE \rightsquigarrow **P**OSS_{SS}OR if the individual is understood to possess authority within or as a representative of the institution:
- my** small business [that I own or operate]
 - the president's administration
- (456)
- Mr. Dursley works **for** Grunnings. (**ORGR**OLE \rightsquigarrow **B**EN_{EF}ICIARY)
 - Mr. Dursley works **at** Grunnings. (**ORGR**OLE \rightsquigarrow **L**OCUS)
 - Mr. Dursley is **from** Grunnings. (**ORGR**OLE \rightsquigarrow **S**OURCE)
 - Mr. Dursley is **with** Grunnings. (**ORGR**OLE \rightsquigarrow **A**CCOMPANIER)
 - Mr. Dursley is employed **by** Grunnings. (**ORGR**OLE \rightsquigarrow **A**GEN_T)
- (457) I always do business **with** this company. (**ORGR**OLE \rightsquigarrow **CO-A**GEN_T)
- (458) **ORGR**OLE \rightsquigarrow **A**CCOMPANIER:
- I bank **with** TSB.
 - my phone service **with** Verizon
- (459) For my Honda I always got replacement parts **through** the dealership. [intermediary business] (**ORGR**OLE \rightsquigarrow **I**NS_{TR}UMENT)
- (460) I serve **on** the committee. (**ORGR**OLE \rightsquigarrow **L**OCUS)

- (461) **ORGR**OLE~>**STUFF** if the governor is an organizational collective noun and the object of the preposition describes the full membership:
- a. An order **of** nuns [repeated at **STUFF**]
 - b. A chamber group **of** 5 players [repeated at **STUFF**]
- with**
- (462) **ORGR**OLE~>**PARTPORTION** if the governor is an organizational collective noun and the object of the preposition denotes a subset of members:
- a. A piano quintet is a chamber group **with** a piano (in it) [repeated at **PARTPORTION**]

A family counts as an institution construed as a **WHOLE** (set of its members) or as a **LOCUS**:

- (463) I am the baby **of** the family. (**ORGR**OLE~>**WHOLE**)
- (464) people **in** my family (**ORGR**OLE~>**LOCUS**)

For a relation between a unit and a larger institution, use **WHOLE**:

- (465) the Principals Committee **of** the National Security Council (**WHOLE**)

See also: **STUFF**

History. **ORGR**OLE is now distinguished within the broader **SOCIALREL** category following the precedent of the Abstract Meaning Representation (AMR; Banarescu et al., 2013, 2015). In AMR, have-org-role-91 captures relations between an individual and an institution (such as an organization or family), whereas have-rel-role-91 is used for relations between two individuals.

5 Constraints on Role and Function Combinations

The present scheme emerged out of extensive descriptive work with corpus data. Given the abundance of rare preposition usages, this document does not claim to cover every possible role/function combination for English, let alone other languages. Below are the few categorical restrictions that seem warranted for English.

5.1 Supersenses that are purely abstract

PARTICIPANT and **CONFIGURATION** are intended only to organize subtrees of the hierarchy, and not to be used directly.

5.2 Supersenses that cannot serve as functions

For English prepositions and possessives, EXPERIENCER, STIMULUS, ORIGINATOR, RECIPIENT, SOCIALREL, and ORGROLE can only serve as scene roles, not functions. Though scenes of perception, transfer, and interpersonal/organizational relationships are fundamental in language, they always seem to exploit construals from other domains (motion, causation, possession, and so forth). (They may be marked more canonically by other English constructions, or by adpositional and case constructions in other languages.)

For example, (466a) is clearly **RECIPIENT** at the scene level—Sam acquires possession of the box—but also fits the criteria for **GOAL** because Sam is an end-point of motion (and **to** frequently marks **GOALS** that are not **RECIPIENTS**). (466b) and (466c) reflect **RECIPIENT**→**AGENT** and **RECIPIENT**→**GESTALT** construals, respectively.

- (466) a. Give the box **to** Sam. (**RECIPIENT**→**GOAL**)
b. the box received **by** Sam (**RECIPIENT**→**AGENT**)
c. Sam's receipt of the box (**RECIPIENT**→**GESTALT**)

Though the **GOAL** construal is arguably the most canonical expression of **RECIPIENT**, there is no preposition with a primary meaning of **RECIPIENT** independent of one of these other domains.

Additional constraints on functions arise in the context of specific constructions (§6). For instance,

- the s-genitive requires either **POSSESSOR** or **GESTALT** as its function (§6.1)
- passive **by** requires **AGENT** or **CAUSER** as its function (§6.2)

5.3 Supersenses that cannot serve as roles

In the present scheme, there are no supersenses that are restricted to serving as functions.

5.4 No temporal-locational construals

Temporal prepositions never occur with a function of LOCUS, PATH, or EXTENT.

Languages routinely borrow from spatial language to describe time, and spatial cognition may underlie temporal cognition (e.g., Lakoff and Johnson, 1980; Núñez and Sweetser, 2006; Casasanto and Boroditsky, 2008). A liberal use of construal would treat *arriving in the afternoon* as TIME \rightsquigarrow LOCUS, *sleeping through the night* as DURATION \rightsquigarrow PATH, *running for 20 minutes* as DURATION \rightsquigarrow EXTENT, and so forth. However, for simplicity and practicality, we elect not to annotate LOCUS, PATH, or EXTENT construals on ordinary temporal adpositions. Thus:

- (467) a. arriving **in** the afternoon (TIME)
b. sleeping **through** the night (DURATION)
c. running **for** 20 minutes (DURATION)

TIME \rightsquigarrow DIRECTION is possible, however, as are other atemporal functions:

- (468) a. Schedule the appointment **for** Monday. (TIME \rightsquigarrow DIRECTION)
b. January **of** last year (TIME \rightsquigarrow WHOLE)
c. Will you attend Saturday's class? (TIME \rightsquigarrow GESTALT)
d. It took a year's work to finish the book. (DURATION \rightsquigarrow GESTALT)

Note that the above is qualified to 'ordinary temporal adpositions'. **When the first argument of a comparative construction is marked with as, the function is always EXTENT, even if the scene role is temporal.** See §6.3.1.

5.5 Construals where the function supersense is an ancestor or descendant of the role supersense

Ordinarily, if a construal holds between two (distinct) supersenses, these are from different branches of the hierarchy. In a few cases, however, one is the ancestor of the other.

Role is ancestor of function.

- Setting events or situations with a salient spatial metaphor are CIRCUMSTANCE \rightsquigarrow LOCUS or CIRCUMSTANCE \rightsquigarrow PATH.
- Fictive motion (the extension of a normally dynamic preposition to a static spatial scene) can warrant LOCUS \rightsquigarrow GOAL or LOCUS \rightsquigarrow SOURCE, as discussed under LOCUS.
- Complete contents of containers are CHARACTERISTIC \rightsquigarrow STUFF.

Function is ancestor of role.

- Some s-genitives are annotated as **WHOLE**→**GESTALT**: see §6.1.
- When a locative PP is coerced to a goal, as with *put*, **GOAL**→**LOCUS** is used.

6 Special Constructions

This section discusses notable constructions that are not limited to a single supersense.

6.1 Genitives/Possessives

Blodgett and Schneider (2018) detail the application of this scheme to English possessive constructions: the so-called **s-genitive**, as in (469), and **of-genitive**, as in (470):

- (469) a. the Smith family's house (**POSSESSOR**)
 their
 b. the tea's price (**GESTALT**)
 its
- (470) a. the house **of** the Smith family (**POSSESSOR**)
 b. the price **of** the tea (**GESTALT**)

Note that the s-genitive is realized with case marking (clitic 's or possessive pronoun³²) rather than a preposition, and the case-marked NP in the s-genitive alternates with the object of the preposition in the of-genitive. (This may feel unintuitive: annotators looking at the s-genitive construction are often tempted to focus on the role occupied by the head noun rather than the case-marked noun.)

The s-genitive and of-genitive are particularly associated with **POSSESSOR** (which applies to a canonical form of possession) and the more general category **GESTALT**; both supersenses are illustrated above (469, 470). In addition, both genitive constructions can mark participant roles and other kinds of relations, including **WHOLE** and **SOCIALREL** relations. When the s-genitive is used, the *function* is always either **GESTALT** (most cases) or **POSSESSOR** (when the possession is sufficiently canonical). While overlapping in scene roles with the s-genitive, **of** is considered compatible with some additional functions, including **WHOLE**, **SOURCE**, and **THEME**; thus of-genitives with such roles do not need to be construed as **GESTALT** or **POSSESSOR**:

- (471) **SOCIALREL**→**GESTALT**:

³²For ease of indexing, 's or s' is preferred over possessive pronouns for s-genitive examples in this document.

- a. the grandfather **of** Lord Voldemort
- b. Lord Voldemort's grandfather
- his**
- (472) a. the hood **of** the car (WHOLE)
- b. the nose **of** He-Who-Must-Not-Be-Named (WHOLE)
- c. the car's hood (WHOLE→GESTALT)
- its**
- d. He-Who-Must-Not-Be-Named's nose (WHOLE→GESTALT)
- his**
- (473) a. the arrival **of** the queen (THEME)
- b. the queen's arrival (THEME→GESTALT)
- her**
- (474) Shakespeare's works (ORIGINATOR→GESTALT)
- his**
- (475) These are children's clothes.³³ [clothes intended for use and possession by children] (BENEFICIARY→POSSESSOR)

The literature on the genitive alternation examines the factors that condition the choice of construction; important factors include the length and animacy of the possessed NP. In addition, **of** participates in certain constructions that are not really possessives—e.g. *this sort of sweater* (SPECIES).

Some difficult cases are clarified below.

Person in relation to a place or travel. In relation to an act of travel, the person is treated as a (possibly non-volitional) participant in a motion event. Otherwise, a person in relation to an associated place is GESTALT.

- (476) **my** destination (THEME→GESTALT)
- journey
- travels
- (477) **my** hometown (GESTALT)
- birthplace

³³Cannot readily be paraphrased with **their** because *children* is not referential, but rather refers to a kind. This construction has been termed the *descriptive genitive* (Quirk et al., 1985, pp. 322, 327–328).

participate in any transparent semantic relationship; for these, ‘\$’ is used (§7.4).

6.2 Passives

tions associated with passive **by** are limited to AGENT and CAUSER:

- (478) a. the decisive vote **by** the City Council (AGENT)
 b. the devastation wreaked **by** the fire (CAUSER)
 c. This story was told **by** my grandmother. (ORIGINATOR \rightsquigarrow AGENT)
 d. The news was not well received **by** the White House. (RECIPIENT \rightsquigarrow AGENT)
 e. Mr. Dursley is employed **by** Grunnings. (ORGROLE \rightsquigarrow AGENT)
 f. The window was broken **by** the hammer. (INSTRUMENT \rightsquigarrow CAUSER)
 g. scared **by** the bear (STIMULUS \rightsquigarrow CAUSER)

6.3 Comparatives and Superlatives

Various constructions express a comparison between two arguments.

COMPARISONREF for second argument. When the second argument (the point of reference) is adpositionally marked, **COMPARISONREF** is used, regardless of its complement's syntactic type:

- (479) a. Your face is as red **as** a rose . (COMPARISONREF)
mine is
b. Your face is redder **than** a rose . (COMPARISONREF)
mine is

See further examples at [COMPARISONREF.](#)

6.3.1 As-as comparative construction

EXTENT argument. In an **as-as** comparison, the scene role of the first argument (the object of the first **as**) is the role that would be operative if the construction were removed and only the first argument remained: e.g., *I stayed as long as I could* → *I stayed long*. The function of the first **as** is always **EXTENT** to reflect that it marks the degree on a scale:

- (480) a. I helped **as** much as I could. (EXTENT)

- b. Your face is **as** red as a rose. (CHARACTERISTIC \leadsto EXTENT)
- c. I helped **as** carefully as I could. (MANNER \leadsto EXTENT)
- d. I stayed **as** long as I could. (DURATION \leadsto EXTENT)
- e. I helped **as** often as I could. (FREQUENCY \leadsto EXTENT)
- f. I've eaten (twice) **as** much (food) as you. [amount of something]
(APPROXIMATOR \leadsto EXTENT)

Second argument: COMPARISONREF. See (479) above.

6.3.2 Superlatives

WHOLE is used for the superset or gestalt licensed by a superlative:

(481) the youngest **of** the children (WHOLE)

See more at WHOLE.

6.4 Infinitive Clauses

In its function as infinitive marker, **to** is not generally considered to be a preposition. Nevertheless, we consider all uses of **to** for adposition supersense annotation because infinitive clauses (infinitivals) can express similar semantic relations as prepositional phrases.

6.4.1 Infinitival varieties of PURPOSE

Most notably, infinitival purpose adjuncts alternate with **for**-PP purpose adjuncts:

(482) PURPOSE:

- a. i. Open the door **to** let in some air.
ii. Open the door **for** some air.
- b. i. I flew to headquarters **to** meet with the principals.
ii. I flew to headquarters **for** a meeting with the principals.

Thus, from a practical point of view, we might as well treat infinitival **to** as capable of marking a PURPOSE.

The following list summarizes semantic analyses that we consider for infinitivals, which are detailed under PURPOSE:

- **Purpose adjuncts**, whether are adverbial or adnominal. These are labeled PURPOSE. Some can be paraphrased with **in_order_to**.

- In a **commercial scene**, a service to performed in exchange for payment; labeled **THEME**→**PURPOSE**. Repeated from the discussion under **THEME**:
 (483) a. They asked \$500 **to** make the repairs. (**THEME**→**PURPOSE**)
 b. \$500 **to** make the repairs was excessive. (**THEME**→**PURPOSE**)
- **Result** infinitives, such as those in (129), are labeled **GOAL**.
- Constructions of **sufficiency and excess**—*too short to ride, not tall enough to ride*, etc., where the assertion of sufficiency or excess licenses an infinitival—are labeled **COMPARISONREF**→**PURPOSE** or **COMPARISONREF**→**GOAL**. See discussions at **COMPARISONREF** and **PURPOSE**.

The non-semantic label **`i** applies to all other uses of the infinitive.

6.4.2 Infinitivals with for-subject

In (482), the infinitive clause has no local subject—rather, an argument of the matrix clause doubles as the subject of the infinitive clause (control). However, a separate subject can be introduced with **for**, in which case **for**+NP is treated as a dependent of the infinitive verb and labeled **`i**:

- (484) a. I opened the door [**for**_{**`i**} Steve **to**_{**PURPOSE**} take out the trash].
 b. It cost \$500 [**for**_{**`i**} the mechanic **to**_{**THEME**→**PURPOSE**} make the repairs].

6.4.3 For_to infinitives

These occur in some English dialects: *for to infinitives*

6.4.4 Other infinitivals

Examples of infinitival tokens that do not receive a semantic label appear in §7.3: OTHER INFINITIVE (**`i**).

6.5 PP Idioms

Many PPs exhibit some amount of lexicalization or idiomaticity. This is especially true of PPs that tend to be used predicatively. In general it is extremely difficult to establish tests to distinguish idiomatic PPs from fully productive combinations. However, the usual criteria apply for the supersense analysis.

For example, if the PP answers a *Where?* question, it qualifies as **LOCUS**; whereas qualitative states usually have **CHARACTERISTIC** as the scene role:

- (485) He is **out_of** town. (**LOCUS**)
 (486) The company is **out_of** business. (**CHARACTERISTIC**→**LOCUS**)

See further discussion at [CHARACTERISTIC](#).

6.5.1 PP Idioms vs. Multiword Prepositions

A PP idiom is a fixed or semi-fixed expression consisting of an adposition plus its complement (usually an NP, AdjP, or AdvP), which must be a complete phrase. In some of these expressions the complement may take variable modifiers (e.g., **on_ ONE's_ own**: see §7.4). The PP idiom as a whole does not take a complement (is intransitive). A fixed expression ending in a transitive preposition like **of** or **as** (**in_search_of, as_long_as**) requires a complement, and thus is not a PP idiom.³⁴

6.5.2 Reflexive PP Idioms

Certain idiomatic constructions involve a preposition that requires a reflexive direct object.

PERFORM-ACTIVITY *for* oneself.

- When something is done for one's own benefit rather than someone else's:
(487) I took a vacation **for** myself ([BENEFICIARY](#))
- When something is done in a way that affords direct rather than second-hand information:
(488) You should try out the restaurant **for** yourself! ([AGENT](#)→[BENEFICIARY](#))

PERFORM-ACTIVITY *by* oneself.

- When something is done without accompaniment (the negation would be **with others**):
(489) I had lunch (all) **by** myself ['alone'] ([ACCOMPANIER](#)³⁵)
- When something is accomplished without assistance:
(490) I made the decision (all) **by** myself. ([MANNER](#))
(491) The computer rebooted all **by** itself. ([MANNER](#))

³⁴Infinitive marker **to** counts as a transitive preposition for purposes of this definition.

³⁵Though *myself* is not literally accompanying *I*, the PP as a whole describes the nature of accompaniment (or lack thereof).

BE *by oneself*. Alone; unaccompanied:

(492) I am **by** myself right now. (ACCOMPANIER)

6.6 Ages

An individual's age is a temporal property, licensing both **TIME** and **CHARACTERISTIC** prepositions:

- (493) a. a child **of** (age) 5 (years) (CHARACTERISTIC)
b. Martha was already reading **at/by/before** (the age of_{IDENTITY}) 5 (years). (TIME)

6.7 Fixed expressions considered non-adpositional

- **Named entities**, including multiword names (e.g., *Out of Africa*, *The Taming of the Shrew*), are treated as single lexemes and should receive a nominal/entity type, not a SNACS supersense.
- **Grammaticalized multiword expressions** like the hedges in (494) and the semi-auxiliaries in §7.3 should not receive a SNACS supersense.

(494) I'm *kind_of* hungry. (non-SNACS)
sort_of

- **Verb-particle combinations** where the particle is not adding a compositional spatial meaning are treated as verbal multiword expressions and do not receive a SNACS supersense.

(495) Compositional spatial meanings:

- a. The leaves blew **up**. (= blew into the air) (DIRECTION)
b. The fan blew the leaves **up**. (DIRECTION)

(496) Idiomatic/non-spatial meanings:

- a. i. I *blew_up* the balloon. (= inflated) (non-SNACS)
ii. I *blew_* the balloon *_up*. (= inflated) (non-SNACS)
b. The bomb *blew_up*. (= literally exploded) (non-SNACS)
c. My friend *blew_up* at_{BENEFICIARY}→_{DIRECTION} me. (= exploded in anger) (non-SNACS)

- Where a verb or other content word absolutely requires a transitive preposition to receive the correct meaning, as in (498),³⁶ it is treated as a content multiword expression and does not receive a SNACS supersense.

(497) I decided to wait **for** someone. (How long did you wait?) (**THEME**)

(498) At the library I *came_across* an interesting book. (#When did you come?) (non-SNACS)

7 Special Labels

For annotating data, there needs to be a way to indicate that *none* of the adposition supersenses apply to a particular token.

7.1 DISCOURSE (`d)

Discourse connectives and other markers that transition between ideas or convey speaker attitude/hedging/emphasis/attribution but do not belong to propositional content. Examples include:

(499) **according_to**; **after_all**, **of_course**, **by_the_way**; **for_chrisssake** (interjection); **above_all**, **to_boot**; **in_other_words**, **on_the_other_hand**; **in** my experience, **in_my_opinion**

This label also covers “additive focusing markers” (Huddleston and Pullum, 2002, p. 592) with a meaning similar to ‘also’ or ‘too’, where an item is added to something already established in the discourse:

(500) a. I shot the sheriff **as_well**.
b. They serve coffee, and tea **as_well**.

It also covers topicalization markers:

(501) **As_for** the sheriff, well, I shot ‘im.

Finally, `d applies to adpositions relating a metalinguistic mention of a speech act to the speech content itself—whether the adposition introduces this speech act mention, as in (502a), or links the discourse expression to a subordinate statement, as in (502b).

(502) a. **To** sum it up: It was a terrible experience.
b. I will sum it up **with**: It was a terrible experience.

³⁶These can be called **integral prepositions**. Verbs with integral prepositions constitute a subtype of **prepositional verbs**, i.e. verbs that select for a particular preposition. Both (497) and (498) can be considered prepositional verbs.

7.2 COORDINATOR (c)

Coordinating conjunctions and similar expressions where the two elements in the relation are semantically on an equal footing, rather than in a figure/ground relationship:

(503) They serve coffee **as_well_as** tea. [‘They serve coffee and also tea’]

7.3 OTHER INFINITIVE (i)

As described in §6.4, infinitive clauses are analyzed with a supersense if and only if they serve as a purpose adjunct, or in certain purpose-related constructions (result; complement of entity-referring indefinite pronoun; commercial service; that which something is good or bad for, or sufficient or excessive for). The special label **i** is reserved for all other uses of infinitival **to**, as well as **for** whenever it introduces the subject of an infinitive clause.³⁷

Infinitivals warranting **i** include:

- (504)
- a. I want **to** meet you. [complement of control verb]
 - b. I would_like **to** try the fish. [*would_like* is a polite alternative to *want*]
 - c. It seems **to** be broken. [complement of raising verb]
 - d. You have an opportunity **to** succeed. [complement of noun]
 - e. I’m ready **to** leave. [complement of adjective]
 - f. I’m glad **to** hear you’re engaged! [complement of emotion adjective]
 - g. These new keys are expensive **to** copy. [tough-movement]
 - h. My plan is **to** eat at noon. [infinitival as NP]
 - i. It’s impossible **to** get an appointment. [infinitival as NP, with cleft]
 - j. I know how **to** lead. [complement of wh-word]
 - k. I have something **to** do. [complement of indefinite pronoun that doesn’t refer to an entity]

Multiword auxiliaries—such as quasi-modals *have_to* ‘must’, *ought_to* ‘should’, etc., as well as *have_yet_to*—subsume the infinitival **to**, so no label on **to** is required:

(505) You have_to choose a date.

Whenever **for** introduces a subject of an infinitival clause, the **for** token is labeled **i** (regardless of whether **to** receives a semantic label; see §6.4):

³⁷Essentially, our position is that these uses of infinitivals are more like syntactically core elements (subject, object) than obliques, and thus should be excluded from semantic annotation under the present scheme.

- (506) a. I need [**for**_i you **to**_i help me].
 b. I opened the door [**for**_i Steve **to**_{PURPOSE} take out the trash].

7.4 OPAQUE POSSESSIVE SLOT IN IDIOM (` \$)

Semantic supersenses are used where possible for genitive/possessive constructions, as discussed in §6.1. However, there are a few idioms which require a possessive pronoun that does not participate transparently in any semantic relation; these are designated with the special label ` \$:

- (507) a. I am eating on_ **my** _own today.
 b. She tried **her** best.
 c. He's not **your** average baseball player.
 d. Billy knows **his** ABCs!

It is also used for the possessive in the *way* construction: contrast

- (508) I like **her** way of eating—it is very polite. (GESTALT)
 (509) She will arrive soon: she is on_ **her** _way. (` \$) [see (13)]
 (510) I don't want to drive there because it is out_of_ **my** _way. (` \$)

References

- Timothy Baldwin, John Beavers, Leonoor van der Beek, Francis Bond, Dan Flickinger, and Ivan A. Sag. In search of a systematic treatment of determinerless PPs. In Patrick Saint-Dizier and Nancy Ide, editors, *Syntax and Semantics of Prepositions*, volume 29 of *Text, Speech and Language Technology*, pages 163–179. Springer, Dordrecht, The Netherlands, 2006.
- Laura Banarescu, Claire Bonial, Shu Cai, Madalina Georgescu, Kira Griffitt, Ulf Hermjakob, Kevin Knight, Philipp Koehn, Martha Palmer, and Nathan Schneider. Abstract Meaning Representation for sembanking. In *Proc. of the 7th Linguistic Annotation Workshop and Interoperability with Discourse*, pages 178–186, Sofia, Bulgaria, August 2013.
- Laura Banarescu, Claire Bonial, Shu Cai, Madalina Georgescu, Kira Griffitt, Ulf Hermjakob, Kevin Knight, Philipp Koehn, Martha Palmer, and Nathan Schneider. Abstract Meaning Representation (AMR) 1.2.2 Specification, September 2015. URL <https://github.com/amrisi/amr-guidelines/blob/c9b899b38f881143887d450be8a8482f810f4942/amr.md>.

- Austin Blodgett and Nathan Schneider. Semantic supersenses for English possessives. In *Proc. of LREC*, Miyazaki, Japan, May 2018.
- Claire Bonial, Bianca Badarau, Kira Griffitt, Ulf Hermjakob, Kevin Knight, Tim O’Gorman, Martha Palmer, and Nathan Schneider. Abstract Meaning Representation of constructions: The more we include, the better the representation. In *Proc. of LREC*, Miyazaki, Japan, May 2018.
- Daniel Casasanto and Lera Boroditsky. Time in the mind: using space to think about time. *Cognition*, 106(2):579–593, February 2008.
- Nancy Chang, Daniel Gildea, and Srini Narayanan. A dynamic model of aspectual composition. In Morton Ann Gernsbacher and Sharon J. Derry, editors, *Proc. of CogSci*, pages 226–231, Madison, WI, USA, August 1998.
- Rodney Huddleston and Geoffrey K. Pullum, editors. *The Cambridge Grammar of the English Language*. Cambridge University Press, Cambridge, UK, 2002.
- Jena D. Hwang, Archana Bhatia, Na-Rae Han, Tim O’Gorman, Vivek Srikumar, and Nathan Schneider. Double trouble: the problem of construal in semantic annotation of adpositions. In *Proc. of *SEM*, pages 178–188, Vancouver, Canada, August 2017.
- Karin Kipper, Anna Korhonen, Neville Ryant, and Martha Palmer. A large-scale classification of English verbs. *Language Resources and Evaluation*, 42(1):21–40, March 2008.
- Wolfgang Klein. *Time in language*. Routledge, London, 1994.
- George Lakoff and Mark Johnson. *Metaphors We Live By*. University of Chicago Press, Chicago, 1980.
- Rafael E. Núñez and Eve Sweetser. With the future behind them: convergent evidence from Aymara language and gesture in the crosslinguistic comparison of spatial construals of time. *Cognitive Science*, 30(3):401–450, May 2006.
- Martha Palmer, Claire Bonial, and Jena Hwang. VerbNet: Capturing English verb behavior, meaning, and usage. In Susan E. F. Chipman, editor, *The Oxford Handbook of Cognitive Science*. October 2017.
- James Pustejovsky. The syntax of event structure. *Cognition*, 41(1):47–81, 1991.
- Randolph Quirk, Sidney Greenbaum, Geoffrey Leech, Jan Svartvik, and David Crystal. *A comprehensive grammar of the English language*. Longman, London, 1985.

- Hans-Jörg Schmid. *English abstract nouns as conceptual shells: From corpus to cognition*. Walter de Gruyter, January 2000.
- Nathan Schneider, Vivek Srikumar, Jena D. Hwang, and Martha Palmer. A hierarchy with, of, and for preposition supersenses. In *Proc. of The 9th Linguistic Annotation Workshop*, pages 112–123, Denver, Colorado, USA, June 2015.
- Nathan Schneider, Jena D. Hwang, Vivek Srikumar, Meredith Green, Abhijit Suresh, Kathryn Conger, Tim O’Gorman, and Martha Palmer. A corpus of preposition supersenses. In *Proc. of LAW X – the 10th Linguistic Annotation Workshop*, pages 99–109, Berlin, Germany, August 2016.
- Nathan Schneider, Jena D. Hwang, Vivek Srikumar, Jakob Prange, Austin Blodgett, Sarah R. Moeller, Aviram Stern, Adi Bitan, and Omri Abend. Comprehensive supersense disambiguation of English prepositions and possessives. In *Proc. of ACL*, Melbourne, Australia, July 2018.
- Vivek Srikumar and Dan Roth. Modeling semantic relations expressed by prepositions. *Transactions of the Association for Computational Linguistics*, 1:231–242, May 2013a.
- Vivek Srikumar and Dan Roth. An inventory of preposition relations. Technical Report arXiv:1305.5785, May 2013b. URL <http://arxiv.org/abs/1305.5785>.
- Leonard Talmy. Fictive motion in language and “ception”. In Paul Bloom, Mary A. Peterson, Nadel Lynn, and Merrill F. Garrett, editors, *Language and Space*, pages 211–276. MIT Press, Cambridge, MA, 1996.
- K. S. Yadurajan. *Current English: a guide for the user of English in India*. Oxford University Press, Oxford, UK, August 2001.

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