

# Superframes Manual

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## 1 Introduction

Superframes is an annotation scheme for semantic roles. Like other such schemes, it is essentially about pinning down, in a machine-readable form, “who did what to whom”. It is different from other such schemes, such as FrameNet (Baker et al., 1998), VerbNet (Kipper Schuler, 2005), PropBank (Palmer et al., 2005), VerbAtlas (Di Fabio et al., 2019), or WiSER (Feng et al., 2022) in a number of ways. It aims to avoid a number of practical problems in annotating with those schemes. Here’s how Superframes annotation works, in a nutshell:

1. Every content word (verb, noun, pronoun, adjective, or adverb) is a *predicate*. Every predicate evokes one of a few dozen *superframes*, which determines its coarse semantic class and the possible role labels for its core arguments.

Superframe	Roles				Sec.
<b>SCENE</b>	<b>initial-scene</b>	<b>participant</b>	<b>scene</b>	<b>transitory-scene</b>	<b>target-scene</b>
<b>IDENTIFICATION</b>		<b>identified</b>	<b>identifier</b>		
<b>RANK</b>		<b>has-rank</b>	<b>rank</b>		
<b>CLASS</b>	<b>initial-class</b>	<b>has-class</b>	<b>class</b>		<b>target-class</b>
<b>EXISTENCE</b>			<b>exists</b>		
TRANSFORMATION-CREATION		material			created
REPRODUCTION		original			copy
<b>QUALITY</b>		<b>has-quality</b>	<b>quality</b>		
<b>STATE</b>	<b>initial-state</b>	<b>has-state</b>	<b>state</b>		<b>target-state</b>
DESTRUCTION		destroyed			
<b>EXPERIENCE</b>		<b>experiencer</b>	<b>experienced</b>		
<b>ACTIVITY</b>		<b>is-active</b>	<b>activity</b>		
<b>MODE</b>		<b>has-mode</b>	<b>mode</b>		
<b>ACCOMPANIMENT</b>		<b>accompanied</b>	<b>accompanier</b>		
DEPictIVE		has-depictive	depictive		
<b>ATTRIBUTE</b>		<b>has-attribute</b>	<b>attribute</b>		
<b>ASSET</b>		<b>has-asset</b>	<b>asset</b>		
<b>COMPARISON</b>		<b>compared</b>	<b>reference</b>		
CONCESSION		assertion	conceded		
<b>EXPLANATION</b>		<b>explained</b>	<b>explanation</b>		
<b>LOCATION</b>	<b>initial-location</b>	<b>has-location</b>	<b>location</b>	<b>transitory-location</b>	<b>target-location</b>
WRAPPING-WEARING		worn	wearer		
ADORNMENT-TARNISHMENT	initial-surface	ornament	surface		target-surface
HITTING		hitting	hit		
INGESTION		ingested		transitory-location	ingerter
EXCRETION	excreter	excreted		transitory-location	
UNANCHORED-MOTION		has-location		transitory-location	
<b>MEANS</b>		<b>has-means</b>	<b>means</b>		
<b>MESSAGE</b>		<b>topic</b>	<b>content</b>		
<b>PART-WHOLE</b>	<b>initial-whole</b>	<b>part</b>	<b>whole</b>		<b>target-whole</b>
<b>POSSESSION</b>	<b>initial-possessor</b>	<b>possessed</b>	<b>possessor</b>		<b>target-possessor</b>
<b>QUANTITY</b>		<b>has-quantity</b>	<b>quantity</b>		
<b>SENDING</b>		<b>sent</b>	<b>sender</b>		
<b>SEQUENCE</b>		<b>follows</b>	<b>followed</b>		
CAUSATION		result	causer		
REACTION		reaction	trigger		
RESULTATIVE		has-resultative	resultative		
CONDITION		has-condition	condition		
EXCEPTION		has-exception	exception		
<b>SOCIAL-RELATION</b>	<b>initial-social-relation</b>	<b>has-social-relation</b>	<b>social-relation</b>		<b>target-social-relation</b>
ORG-ROLE	initial-org	has-org-role	org		target-org
<b>TIME</b>		<b>has-time</b>	<b>time</b>		
<b>NONCOMP</b>		<b>has-noncomp</b>	<b>noncomp</b>		

Table 1: The superframes and their roles. Top-level superframes are shown in bold. Underneath, some superframes have special cases with partly renamed roles, included to make them more intuitive to apply.

2. The syntactic *dependents* of a predicate can be *core arguments*, in which case they get one of the role labels defined by the superframe of the predicate, or *external arguments* or *modifiers*, in which case they are treated as evoking their own frame in which the predicate serves as a core argument.
3. There are only two main core role labels per superframe.
4. For predicates denoting change (or lack thereof) over time, some superframes have *aspectual variants* with role variants that allow to distinguish participants before, during, and after an event. This avoids having Source and Target as roles in their own right, which indicate the time sequence but suppress information about the nature of the relation that is changing.
5. Similarly, Superframes do not have the Agent role, which is often in conflict with roles indicating more specifically the agent's relation to other participants.
6. Doubt, ambiguity, and figurativity are systematically treated. If there is not one clear solution, the solution is to give two or more alternative labels.

Table 1 shows the superframes and their roles.

## 1.1 Core Arguments

The most prototypical predicate is a verb, and the simplest case is a verb with only one argument. It can for example denote a state or an activity:

- (1) Kim is sleeping<sub>STATE</sub>
- (2) Kim is partying<sub>ACTIVITY</sub>

With two core arguments, a verb denotes a relation that holds between them:

- (3) Kim owns<sub>POSSESSION</sub> a house
- (4) The house belongs<sub>POSSESSION</sub> to Kim
- (5) Kim seems<sub>MESSAGE</sub> happy

## 1.2 Aspect and Mode

Rather than a static relationship between two entities, many verbs (and other predicates) denote a change (or absence of change) in such a relationship. We sort such predicates into a few coarse aspectual classes. For example, initiation (-INIT) means a state is begun or worked towards, deinitiation (-DEINIT)

means a state is ended, completed, or its end is worked towards, change (-CHANGE) combines both, where one state is replaced by another, and continuation (-CONTINUATION) means a state persists or is even intensified. Accordingly, roles with prefix *target-* mark participants at or beyond the end of the event, *initial-* marks participants at the beginning of the event, and *transitory-* marks participants at some point during the event.

- (6) Kim got<sub>POSSESSION-INIT</sub> the house
- (7) Kim lost<sub>POSSESSION-DEINIT</sub> the house
- (8) Kim sold<sub>POSSESSION-CHANGE</sub> the house to Sandy
- (9) Kim kept<sub>POSSESSION-CONTINUATION</sub> the house
- (10) Kim went<sub>LOCATION-CHANGE</sub> from Chicago via Pittsburgh to Boston
- (11) The vase fell<sub>LOCATION-CHANGE</sub> to the ground
- (12) The vase broke<sub>STATE-CHANGE</sub>
- (13) Kim befriended<sub>SOCIAL-RELATION-INIT</sub> Sandy
- (14) Kim married<sub>SOCIAL-RELATION-INIT</sub> Sandy
- (15) Kim divorced<sub>SOCIAL-RELATION-DEINIT</sub> Sandy

The SCENE superframe is often evoked by “light” verbs that contribute an aspectual or modal meaning. Thus, its aspectual variants are especially common.

- (16) The concert began<sub>SCENE-INIT</sub>
- (17) The concert continued<sub>SCENE-CONTINUATION</sub>

- (18) The concert finished<sub>SCENE-DEINIT</sub>
- (19) The shouting intensified<sub>SCENE-CONTINUATION</sub>
- (20) The shouting faded<sub>SCENE-DEINIT</sub>
- (21) A coup was attempted<sub>SCENE-INIT</sub>
- (22) Kim finished<sub>SCENE-DEINIT</sub> their work

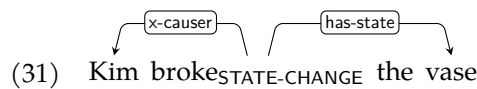
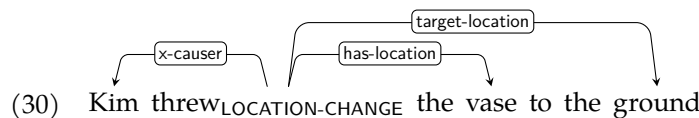
In addition, we use the modal suffixes -NECESSITY, -POSSIBILITY, and -NEG. They can combine with aspectual suffixes.

- (23) Change is necessary<sub>SCENE-NECESSITY</sub>
- (24) Change is possible<sub>SCENE-POSSIBILITY</sub>
- (25) Kim owes<sub>POSSESSION-CHANGE-NECESSITY</sub> Sandy money
- (26) Swift action prevented<sub>SCENE-INIT-NEG</sub> an outbreak
- (27) Kim refrained<sub>SCENE-INIT-NEG</sub> from going
- (28) Kim prevented<sub>SCENE-INIT-NEG</sub> Sandy from going
- (29) Kim saved<sub>SCENE-INIT-NEG</sub> Sandy from the dragon

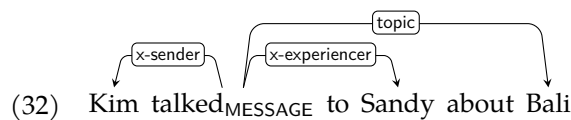
In the last example, *dragon* is to be understood metonymically as a scene in which Sandy would have been harmed by the dragon.

### 1.3 Non-core Arguments

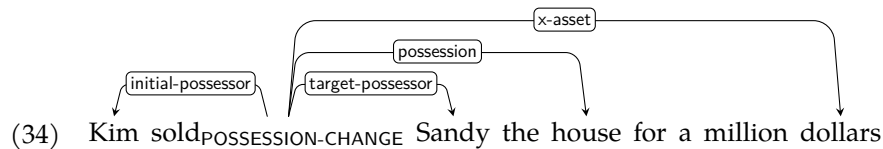
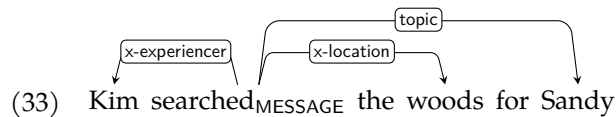
Core arguments always get role labels from the superframe the predicate evokes. But many verbs have more arguments. One common case is a subject that is presented as the causer of the scene. For example, compare (30) with (11). The core scene is the same (same superframe, same arguments). We now assume there is an additional CAUSATION scene with *Kim* as the causer and the core scene as the result. We denote this by giving *Kim* the causer role label, with an x- prefix to mark it as a non-core role.



Two other common non-core arguments are the senders and recipients (experiencers) of messages.

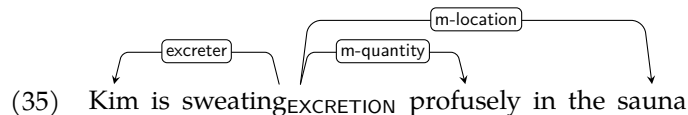


Other non-core arguments are usually rather predicate-specific.



### 1.4 Modifiers

Like non-core arguments, modifiers are assumed to evoke an additional frame, and labeled with the role they fill in that frame, but with a prefix marking them as modifiers: m-.

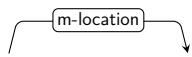


### 1.5 Nonverbal Predicates

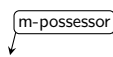
So far, we have only looked at verbal predicates. But of course, there are other types of predicates. An ordinary noun like *tree* evokes the CLASS frame, mark-

ing the entity it refers to as being a member of a class (in this case: the class of trees). There are no arguments here because the predicate itself doubles as a referent. However, the predicate can of course be modified:

(36) a tree<sub>CLASS</sub> in the garden



(37) Kim 's tree<sub>CLASS</sub>




Event nouns evoke event frames and have arguments:

(38) Kim 's breaking<sub>STATE-CHANGE</sub> of the vase



Relational nouns evoke relational frames and have arguments:

(39) Kim 's friend<sub>SOCIAL-RELATION</sub>



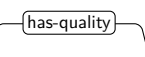
Pronouns and names evoke the IDENTIFICATION frame, meaning that they identify their referent as some entity (via naming or anaphora resolution).

(40) Kim<sub>IDENTIFICATION</sub>

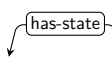
(41) they<sub>IDENTIFICATION</sub>

Predicate adjectives most typically denote states or qualities.

(42) I am despicable<sub>QUALITY</sub>

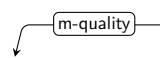


(43) the dog is tired<sub>STATE</sub>




With attributive adjectives, the dependency relation is reversed, and the role label is changed accordingly.

(44) despicable me<sub>IDENTIFICATION</sub>

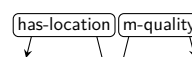


(45) the tired dog<sub>CLASS</sub>

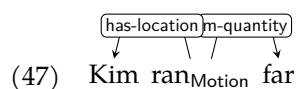


Similarly for adverbs denoting, e.g, manner (quality) or extent (quantity):

(46) Kim ran<sub>Motion</sub> fast



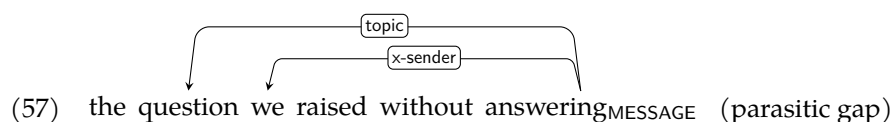
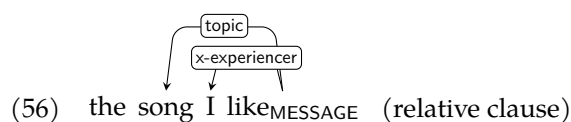
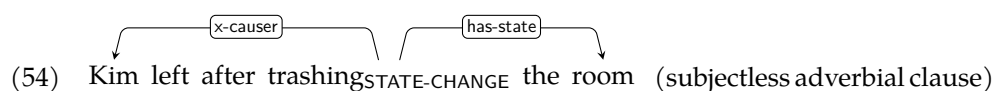
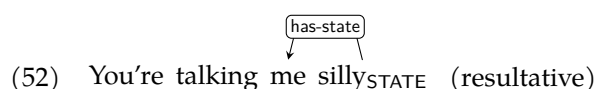
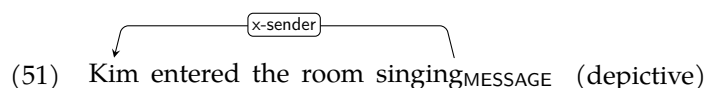
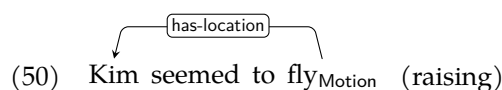
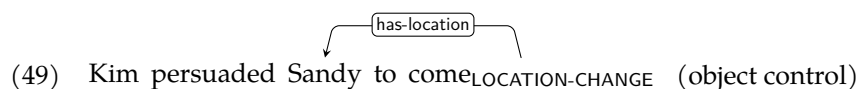
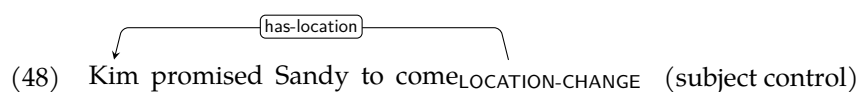




## 1.6 Control Relations

spell out strategies for consistent detection (xcomp, MESSAGE/SCENE frames, special cases...)

Many constructions systematically introduce semantic predicate-dependent dependencies that do not correspond to (surface) syntactic dependencies. In such cases, we add those dependency links.



## 1.7 Figurativity and Idiomaticity

Difficulties in choosing frames often arise because a predicate literally evokes one frame, but is used in a way that perhaps fits another frame equally well or

better. In such cases, annotate both the more literal frame and roles, followed by the >> operator, followed by the more figurative frame and roles.

(58) A hush passed<sub>LOCATION-CHANGE » SCENE</sub> over the group

(59) Kim refused<sub>MESSAGE » SCENE</sub> to eat

This mechanism can be used to indicate that a modification may not be fully compositional:

(60) primeval forest<sub>CLASS</sub>

(61) colored pencil<sub>CLASS</sub>

(62) to lay<sub>LOCATION-CHANGE » MESSAGE-DEINIT</sub> aside my drawings

## 2 Superframes Reference

### 2.1 SCENE

A “meta” frame for predicates where the main frame is invoked by scene, and the predicate adds some temporal, aspectual, modal, etc., meaning, or just acts as a light verb. If there is a participant, it is assigned a role by scene. In the following examples, we show the annotations for both the matrix predicate and the embedded predicate in one graph.

(63) The concert<sub>MESSAGE</sub> began<sub>SCENE-INIT</sub>

(64) The concert<sub>MESSAGE</sub> continued<sub>SCENE-CONTINUATION</sub>

(65) The concert<sub>MESSAGE</sub> finished<sub>SCENE-DEINIT</sub>

(66) The shouting<sub>MESSAGE</sub> intensified<sub>SCENE-CONTINUATION</sub>

(67) The shouting<sub>MESSAGE</sub> faded<sub>SCENE-DEINIT</sub>

- (68) A coupe<sub>EXPERIENCE</sub> was attempted<sub>SCENE-INIT</sub>
- (69) Kim finished<sub>SCENE-DEINIT</sub> their work<sub>ACTIVITY</sub>
- (70) Swift action prevented<sub>SCENE-INIT-NEG</sub> an outbreak<sub>SCENE-INIT</sub> of measles<sub>EXPERIENCE</sub>
- (71) Kim refrained<sub>SCENE-INIT-NEG</sub> from going<sub>LOCATION-CHANGE</sub>
- (72) Kim prevented<sub>SCENE-INIT-NEG</sub> Sandy from going<sub>LOCATION-CHANGE</sub>
- (73) Kim saved<sub>SCENE-INIT-NEG</sub> Sandy from the dragon<sub>CLASS</sub>
- (74) Kim plays<sub>SCENE</sub> tennis<sub>ACTIVITY</sub>
- (75) Kim used<sub>SCENE</sub> to plays<sub>SCENE</sub> tennis<sub>ACTIVITY</sub>
- (76) Kim gave<sub>SCENE</sub> Sandy a kick<sub>HITTING</sub>

The modifier relation m-scene is used when a syntactic dependency points from an argument to a predicate, as, e.g., with relative clauses or evaluatives.

- (77) the clown<sub>CLASS</sub> I saw<sub>MESSAGE</sub> smiled
- (78) Fortunately<sub>EXPERIENCE</sub> for Sandy , Kim is here<sub>LOCATION</sub>

## 2.2 IDENTIFICATION


identifier identifies identified.

Evoked by pronouns, names, and other identifiers, as well as predicates denoting naming relationships.

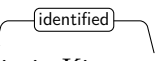
(79) I<sub>IDENTIFICATION</sub> saw a picture

(80) I can distinguish China<sub>IDENTIFICATION</sub> from Arizona

(81) a book called<sub>IDENTIFICATION</sub> True Stories from Nature

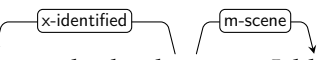


(82) This is Kim<sub>IDENTIFICATION</sub>



Predicates that evoke other frames can still use x-identified to mark the copula subject as identified:

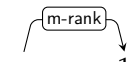
(83) This is the book<sub>MESSAGE</sub> I like



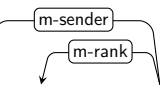
## 2.3 RANK

rank indicates the order that has-rank has in some sequence.

(84) Chapter<sub>MESSAGE</sub> 1



(85) my first drawing<sub>MESSAGE</sub>



## 2.4 CLASS

class indicates the class of entity that has-class represents.

Most prototypically evoked by common nouns with no arguments.

(86) swallowing an animal<sub>CLASS</sub>

## 2.5 EXISTENCE

exists exists. Use this only for non-scene entities; for scenes, use the SCENE frame.

- (87) I exist<sub>EXISTENCE</sub>
- (88) There is<sub>EXISTENCE</sub> a hill
- (89) There is<sub>SCENE</sub> a hubbub

## 2.6 TRANSFORMATION-CREATION

Special case of EXISTENCE-INIT where rcreated (aka target-exists) is newly created from material, or material is transformed to become created.

- (90) I succeeded in making<sub>Transformation-Creation</sub> my first drawing
- (91) Kim built<sub>Transformation-Creation</sub> a castle out of sand
- (92) Kim turned<sub>Transformation-Creation</sub> straw into gold

## 2.7 REPRODUCTION

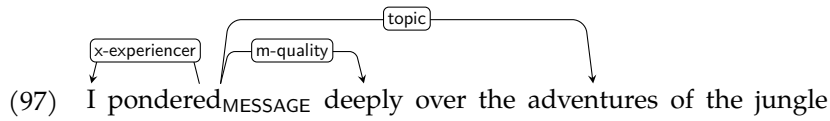
Special case of EXISTENCE-INIT where original continues to exist, and a (modified) copy (aka target-exists) comes into existence.

- (93) Here is a copy<sub>Reproduction</sub> of the drawing
- (94) This is a translation<sub>Reproduction</sub> of the pamphlet into English

## 2.8 QUALITY

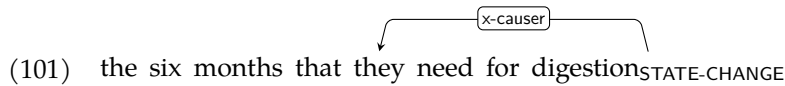
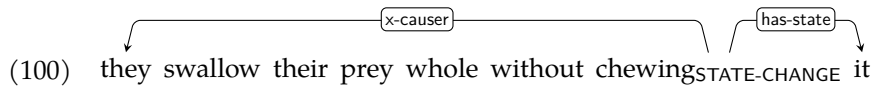
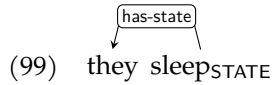
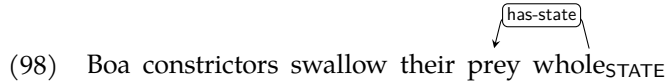
quality indicates a (permanent) quality/property/manner of has-quality.

- (95) when I was six years old<sub>QUALITY</sub>
- (96) a magnificent picture<sub>MESSAGE</sub>



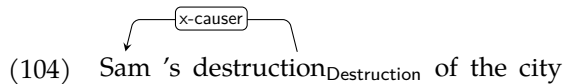
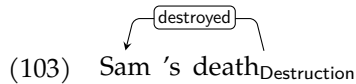
## 2.9 STATE

state indicates a (temporary) state of has-state.



## 2.10 DESTRUCTION

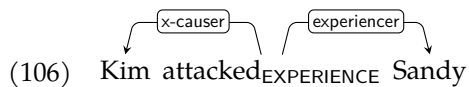
Special case of STATE-CHANGE where destroyed (aka has-state) goes out of existence.



## 2.11 EXPERIENCE

experienced indicates an experience that experiencer undergoes.

Used for dynamic scenes where the experiencer is not necessarily active, and that cannot well be framed as a state change. Also used for sensory and mental perception, addressees in communication, beneficiaries, and for "bystander" roles.



- (107) I saw<sub>MESSAGE</sub> a magnificent picture
- (108) I pondered<sub>MESSAGE</sub> deeply
- (109) Kim talked<sub>MESSAGE</sub> to Sandy
- (110) Kim did<sub>SCENE</sub> something nice for Sandy
- (111) Kim cooked a meal only to have<sub>SCENE</sub> Sandy spurn it
- (112) Kim managed<sub>EXPERIENCE</sub> with dealing the cards
- (113) Die Piroggen waren Maria zu dunkel geraten<sub>SCENE-INIT</sub>
- (114) Das hat mir gerade noch gefehlt<sub>EXPERIENCE</sub>

For more uses, see MESSAGE (Section 2.29).

## 2.12 ACTIVITY

is-active actively participates in activity.

Used for dynamic scenes where is-active has agency and that cannot well be framed as a state change.

- (115) Kim worked<sub>ACTIVITY</sub>
- (116) Kim partied<sub>ACTIVITY</sub>
- (117) Kim had sex<sub>ACTIVITY</sub>

- (118) after some work<sub>ACTIVITY</sub> with a colored pencil
- (119) I devoted myself to geography<sub>ACTIVITY</sub>

### 2.13 MODE

Used for adverbial modifiers that have no arguments other than the phrase they modify, and that, roughly speaking, indicate the modal strength of what is expressed and/or its relation to the discourse.

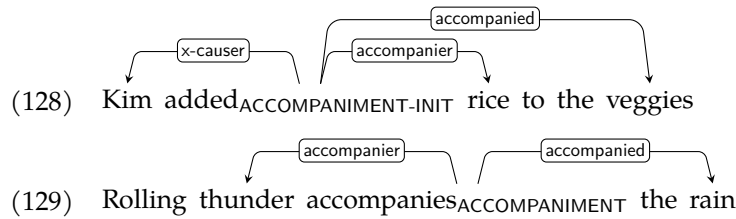
- (120) Even Kim<sub>IDENTIFICATION</sub> did n't know that
- (121) They only rinsed<sub>ADORNMENT-TARNISHMENT-DEINIT</sub> the dishes
- (122) Passt<sub>COMPARISON</sub> das eh ?
- (123) Kim probably knows<sub>MESSAGE</sub> that
- (124) That 's really great<sub>QUALITY</sub>
- (125) Kim is not here<sub>LOCATION</sub>

### 2.14 ACCOMPANIMENT

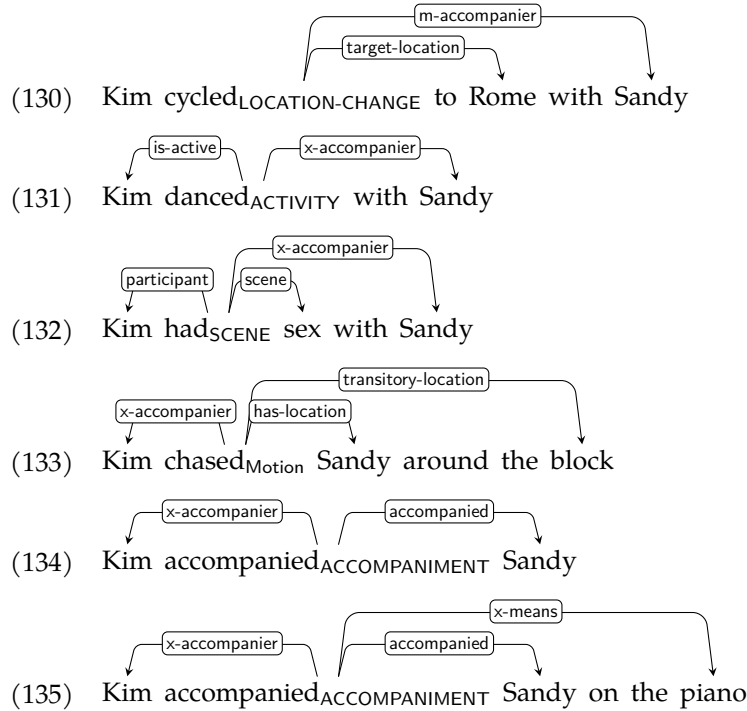
accompanier accompanies accompanied, meaning that it occurs together with it or participates equally in the same scene.

- (126) veggies<sub>CLASS</sub> with rice
- (127) The veggies come<sub>ACCOMPANIMENT</sub> with rice



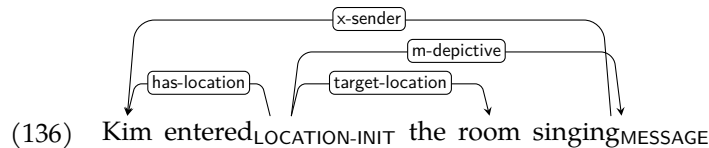


Often, the accompanier denotes not the accompanying scene but an entity participating in it, and must be metonymically understood as the scene.



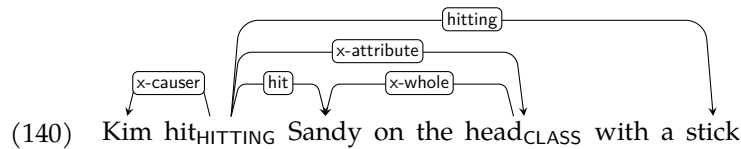
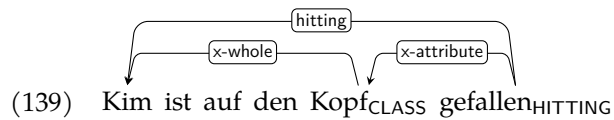
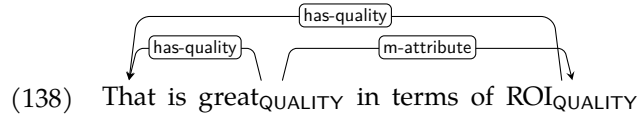
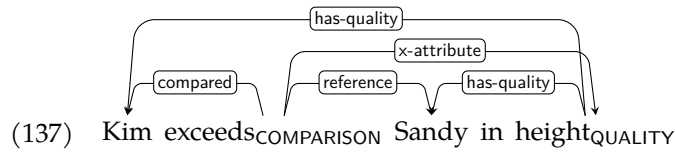
## 2.15 DEPICTIVE

Special case of ACCOMPANIMENT where depictive (aka accompanier) assigns a participant of has-depictive (aka accompanied) a role (cf. Sec. 1.6).



## 2.16 ATTRIBUTE

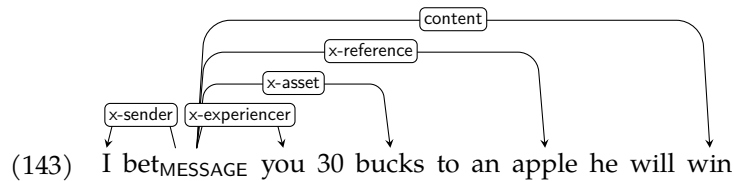
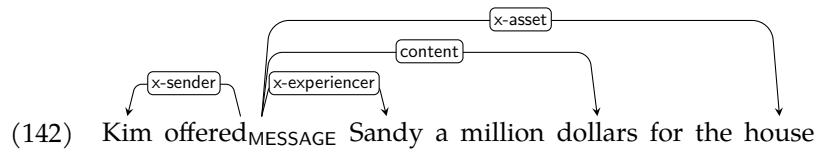
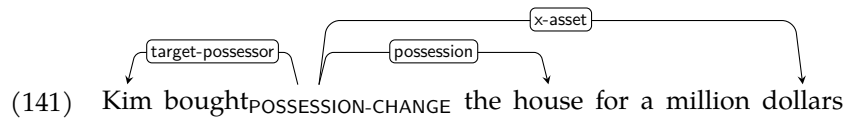
In a scene has-attribute, attribute is the part or attribute of one or more participants that is most directly involved in the scene.



Control relations?

## 2.17 ASSET

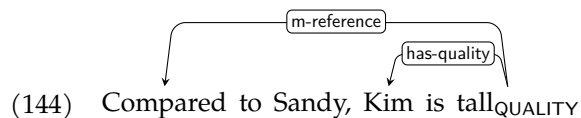
In a scene has-asset, asset is given or offered in an exchange or wager.



## 2.18 COMPARISON

compared is characterized with respect to reference.

Examples of comparing scenes:



(145) Sandy is short<sub>QUALITY</sub> whereas Kim is tall

(146) They demonize<sub>MESSAGE</sub> the left while doing nothing about the right

Examples of comparing non-scene entities:

(147) Kim outranks<sub>COMPARISON</sub> Sandy

(148) Kim exceeds<sub>COMPARISON</sub> Sandy in height

(149) The Polish restaurant compared<sub>COMPARISON</sub> favorably to the Spanish one

(150) Kim compared<sub>COMPARISON</sub> Coke to Pepsi

(151) Kim ran<sub>COMPARISON</sub> afoul of Fielding 's constraints

## 2.19 CONCESSION

Special case of COMPARISON, where compared is what's asserted and reference is what's conceded.

(152) Kim went<sub>LOCATION-CHANGE</sub> out despite the rain

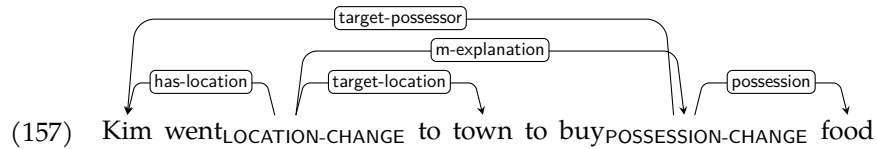
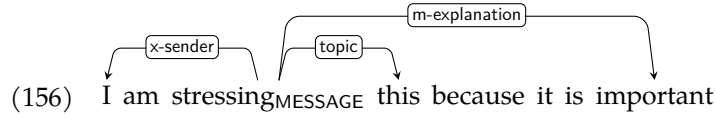
(153) It rained<sub>STATE</sub> , but Kim went went out

(154) Kim sent<sub>SENDING</sub> Sandy a letter but it never arrived

(155) Kim came<sub>LOCATION-CHANGE</sub> although Sandy had told them not to

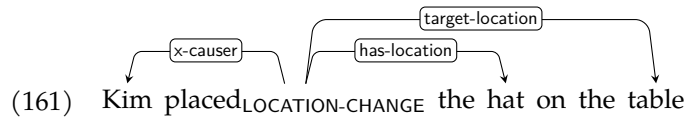
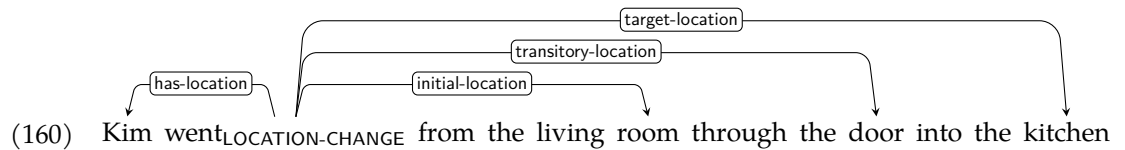
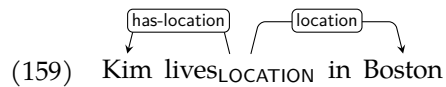
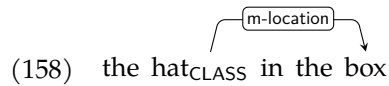
## 2.20 EXPLANATION

explanation explains explained, but is not a cause, but, e.g., a purpose.



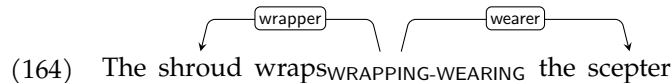
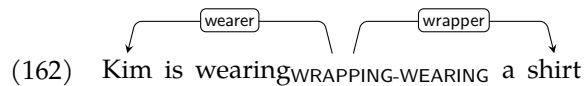
## 2.21 LOCATION

Describes has-location as located or moving wrt. respect to location.



## 2.22 WRAPPING-WEARING

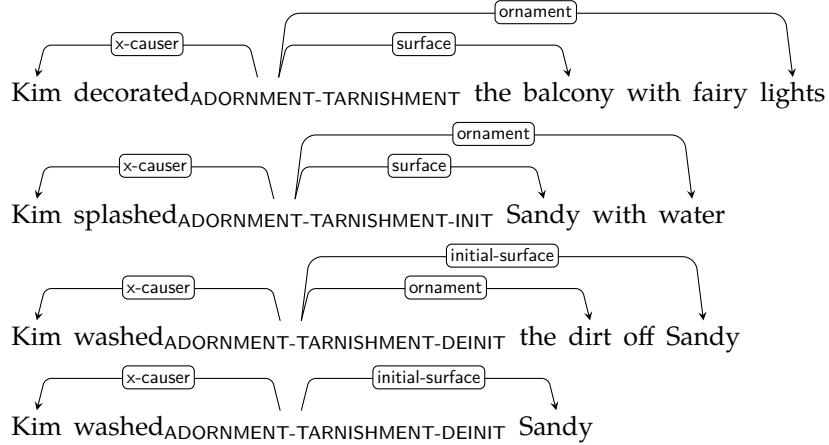
Special case of LOCATION where wearer (aka location) wears or is wrapped in wrapper (aka has-location).





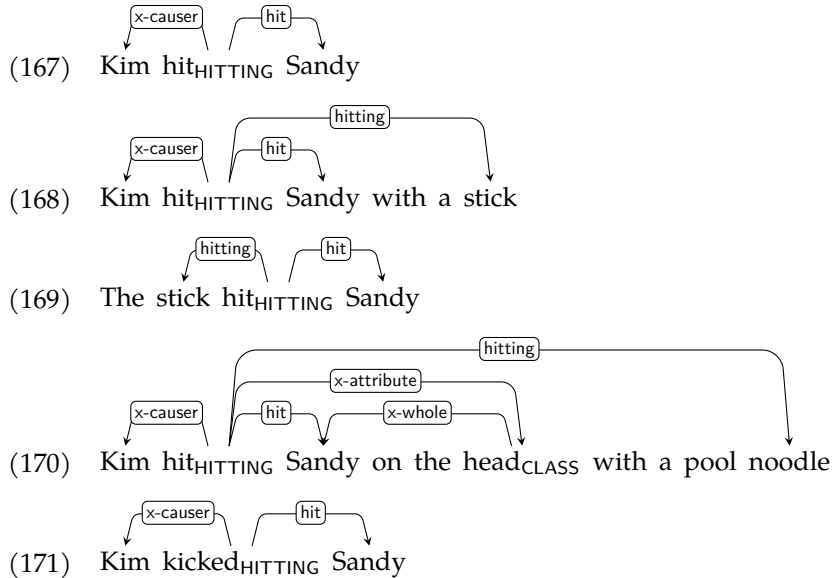
## 2.23 ADORNMENT-TARNISHMENT

Special case of LOCATION where ornament (aka has-location sits on surface (aka location)).



## 2.24 HITTING

Special case of LOCATION-INIT where hitting (aka has-location) comes into contact with hit (aka target-location).



## 2.25 INGESTION

Special case of LOCATION-INIT where ingester (aka target-location) ingests ingested (aka has-location).

- (172) Kim ate<sub>INGESTION</sub> an apple
- (173) Kim nibbled<sub>INGESTION</sub> on the pretzel

## 2.26 EXCRETION

Special case of LOCATION-DEINIT where excreter (aka initial-location) excretes excreted (aka has-location).

- (174) Kim threw<sub>EXCRETION</sub> up the pretzel

## 2.27 UNANCHORED-MOTION

Special case of LOCATION-CHANGE where no initial or target location is indicated.

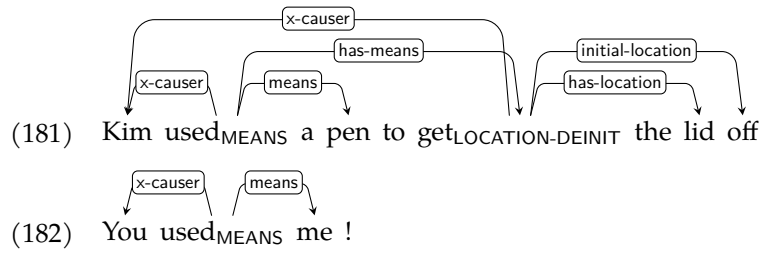
- (175) Kim is running<sub>UNANCHORED-MOTION</sub> along the river
- (176) I learned to pilot<sub>UNANCHORED-MOTION</sub> airplanes
- (177) Kim is dancing<sub>UNANCHORED-MOTION</sub> around the room with Sandy
- (178) Kim is an avid unicyclist<sub>UNANCHORED-MOTION</sub>

define clearly when dancing etc. is UNANCHORED-MOTION and when it is ACTIVITY

## 2.28 MEANS

has-means is a scene caused by something via an intermediary means.

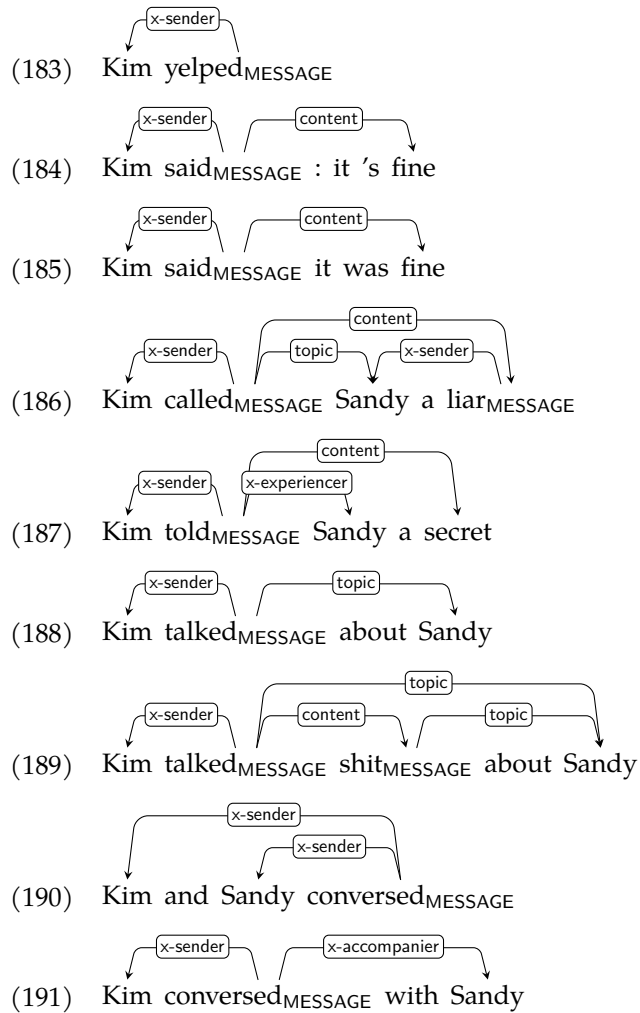
- (179) Kim cut<sub>STATE-CHANGE</sub> the cake with a knife
- (180) Kim painted<sub>ADORNMENT-TARNISHMENT</sub> the room by exploding a paint bomb



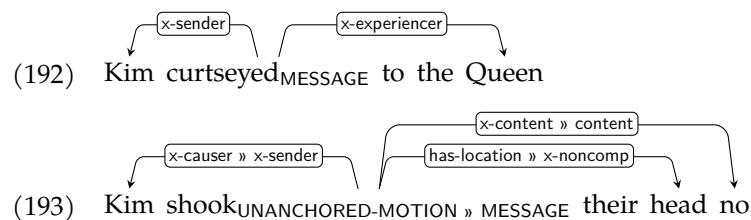
## 2.29 MESSAGE

A message about topic with content content is expressed or received or just exists in recorded form. When content and topic are both realized, content must assign a role to topic.

### 2.29.1 Expression

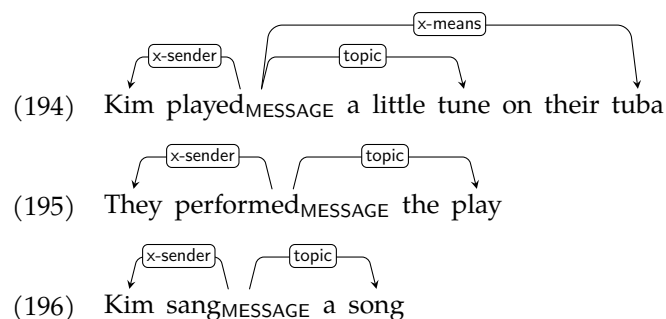


### 2.29.2 Gesture

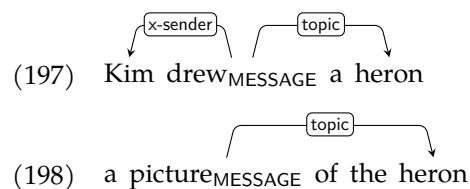


### 2.29.3 Performance

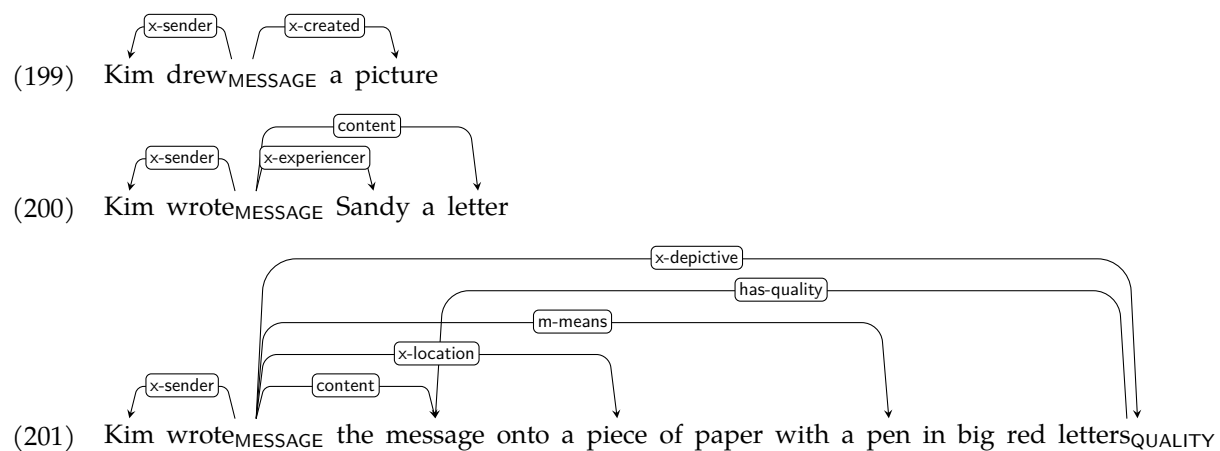
Performance of a work of art is framed as MESSAGE where the work of art is the topic.



### 2.29.4 Depiction



### 2.29.5 Recording





(202) The concert was recorded<sub>MESSAGE</sub> on tape

(203) The band recorded<sub>MESSAGE</sub> an album

### 2.29.6 Perception

We also frame perception as MESSAGE, including mental and volitional perception.

(204) Kim saw<sub>MESSAGE</sub> a flower

(205) Kim found<sub>MESSAGE</sub> the flower beautiful<sub>QUALITY</sub>

(206) Kim thinks<sub>MESSAGE</sub> Sandy is a liar

(207) Kim thinks<sub>MESSAGE</sub> Sandy a liar<sub>MESSAGE</sub>

(208) Kim saw<sub>MESSAGE</sub> Sandy swim<sub>UNANCHORED-MOTION</sub>

(209) Kim wants<sub>MESSAGE</sub> to swim<sub>UNANCHORED-MOTION</sub>

(210) Kim wants<sub>MESSAGE</sub> Sandy to swim<sub>UNANCHORED-MOTION</sub>

(211) Kim seems<sub>MESSAGE</sub> happy<sub>MESSAGE</sub>

(212) Kim seems<sub>MESSAGE</sub> happy<sub>MESSAGE</sub> to Sandy

(213) The Thought Police observed<sub>MESSAGE</sub> Winston

- (214) Kim studies<sub>MESSAGE</sub> linguistics
- (215) Sandy is a professor<sub>MESSAGE</sub> of linguistics
- (216) The jury found<sub>MESSAGE</sub> Kim guilty<sub>SCENE</sub> of the crime<sub>ACTIVITY</sub>

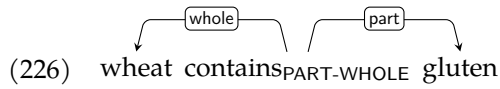
Use MESSAGE-INIT (MESSAGE-DEINIT, MESSAGE-INIT-NEG) for the coming about (ending, failing to come about) of knowledge and awareness.

- (217) Kim noticed<sub>MESSAGE-INIT</sub> the bird
- (218) Kim taught<sub>MESSAGE-INIT</sub> Sandy Spanish
- (219) Kim measured<sub>MESSAGE-INIT</sub> the elasticity
- (220) Kim forgot<sub>MESSAGE-DEINIT</sub> everything they knew
- (221) Kim forgot<sub>MESSAGE</sub> about the cake
- (222) Kim forgot<sub>MESSAGE-INIT-NEG</sub> to take the trash out

## 2.30 PART-WHOLE

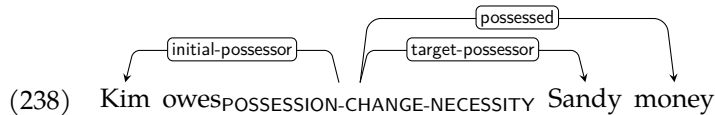
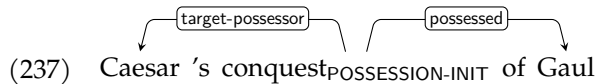
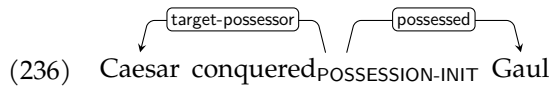
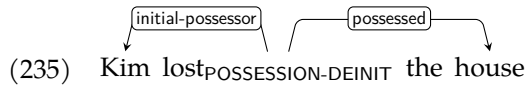
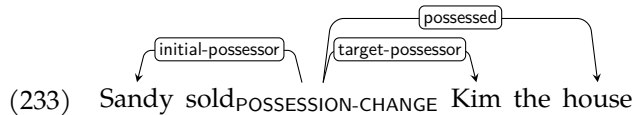
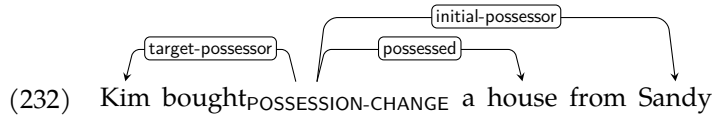
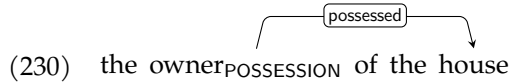
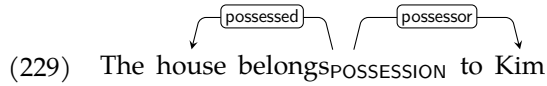
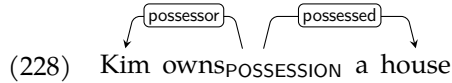
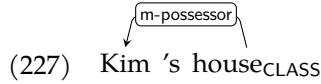
part is part of whole.

- (223) Kim 's leg<sub>CLASS</sub>
- (224) a man<sub>CLASS</sub> with a mustache
- (225) part<sub>PART-WHOLE</sub> of the year



## 2.31 POSSESSION

possessor possesses or controls the possessed.



## 2.32 QUANTITY

quantity is the quantity, degree, or extent of has-quantity.

- (239) three burgers<sub>CLASS</sub>
- (240) three liters<sub>QUANTITY</sub> of coke
- (241) We discourage<sub>MESSAGE</sub> this emphatically

## 2.33 SENDING

sender originates a message, sent, that can be experienced.

- (242) According to Kim it is raining<sub>STATE</sub>

For more uses, see MESSAGE (Section 2.29).

## 2.34 SEQUENCE

follows follows followed, e.g., temporally, logically, by rank, as heir, etc.

- (243) Form follows<sub>SEQUENCE</sub> function
- (244) Cook is Jobs 's successor<sub>SEQUENCE</sub>
- (245) Das fußt<sub>SEQUENCE</sub> auf einer falschen Vorstellung
- (246) Kim deduced<sub>SEQUENCE</sub> the truth from the clues
- (247) Given that I 'm tired , I wo n't be there<sub>LOCATION</sub>

## 2.35 CAUSATION

Special case of SEQUENCE where causer (aka followed) causes result (aka follows).

- (248) Kim broke<sub>STATE-CHANGE</sub> the glass
- (249) The knife cut<sub>STATE-CHANGE</sub> the bread
- (250) Kim cut<sub>STATE-CHANGE</sub> the bread with a knife
- (251) The war caused<sub>CAUSATION</sub> a famine
- (252) There was<sub>SCENE</sub> a famine because of the war
- (253) Der Wasserdruck stieg<sub>QUANTITY-CHANGE</sub> , wodurch der Brunnen überfloss
- (254) Die Qualität ist der Motivation geschuldet<sub>CAUSATION</sub>
- (255) Kim went<sub>LOCATION-CHANGE</sub> to town because they wanted to buy food

Note how the last example expresses a purpose, but expresses it as a cause, so m-causer is the right label to use. Compare this to construal as a purpose:

- (256) Kim went<sub>LOCATION-CHANGE</sub> to town to buy food

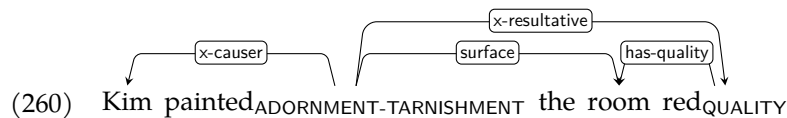
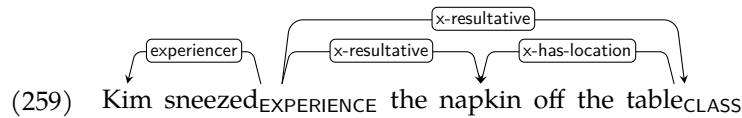
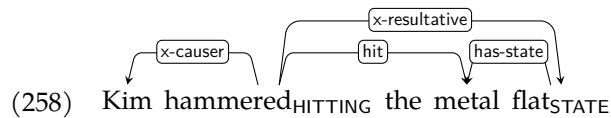
## 2.36 REACTION

Special case of CAUSATION where trigger (aka causer) triggers a reaction (aka result) in the x-causer.

- (257) Kim reacted<sub>SEQUENCE</sub> to the allegations with a denial

## 2.37 RESULTATIVE

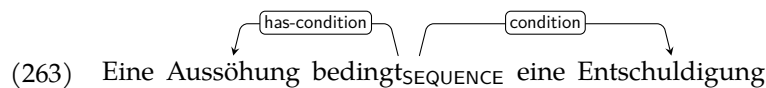
Special case of CAUSATION where resultative (aka result) assigns an argument of has-resultative (aka causer) a role. We treat the English resultative construction as a valency-changing operation that adds one or two arguments to the matrix predicate, so we use x-resultative rather than m-resultative.



explain x-has-location

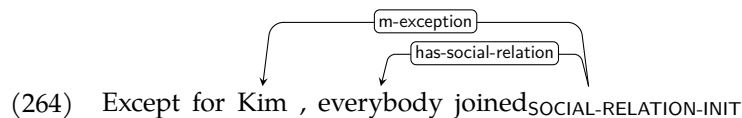
## 2.38 CONDITION

Special case of SEQUENCE where condition (aka followed) is a condition to has-condition (aka follows).



## 2.39 EXCEPTION

Special case of SEQUENCE where exception (aka followed) is an exception (a negative condition, if you will) to has-exception (aka follows).



## 2.40 SOCIAL-RELATION

has-social-relation is an individual that is in some socially constructed relationship with social-relation. social-relation might, e.g., be a relative, a friend, an

organization, a responsibility, or a judicial sentence.

- (265) Kim 's friends<sub>SOCIAL-RELATION</sub>
- (266) Kim is my cousin<sub>SOCIAL-RELATION</sub>
- (267) Kim and Sandy are friends<sub>SOCIAL-RELATION</sub>
- (268) Kim is friends<sub>SOCIAL-RELATION</sub> with Sandy
- (269) Kim works<sub>SOCIAL-RELATION</sub> at Google
- (270) Kim works<sub>SOCIAL-RELATION</sub> for Sandy
- (271) Kim emcees<sub>SOCIAL-RELATION</sub>
- (272) Kim is hosting<sub>SOCIAL-RELATION</sub> the party
- (273) Kim is under house arrest<sub>SOCIAL-RELATION</sub>
- (274) Kim sentence<sub>SOCIAL-RELATION</sub> was suspended
- (275) Kim married<sub>SOCIAL-RELATION-INIT</sub> Sandy
- (276) The official married<sub>SOCIAL-RELATION-INIT</sub> Kim to Sandy
- (277) The official married<sub>SOCIAL-RELATION-INIT</sub> Kim and Sandy
- (278) Kim divorced<sub>SOCIAL-RELATION-INIT</sub> Sandy

- (279) Kim befriended<sub>SOCIAL-RELATION</sub> Sandy
- (280) Kim took<sub>SOCIAL-RELATION-INIT</sub> the job
- (281) Kim joined<sub>SOCIAL-RELATION-INIT</sub> Google
- (282) Kim joined<sub>SOCIAL-RELATION-INIT</sub> a union
- (283) Sandy fired<sub>SOCIAL-RELATION-DEINIT</sub> Kim from their job
- (284) Kim left<sub>SOCIAL-RELATION-DEINIT</sub> Google
- (285) Kim assumed<sub>SOCIAL-RELATION-INIT</sub> office
- (286) The judge sentenced<sub>SOCIAL-RELATION-INIT</sub> Kim to three days in prison
- (287) Kim was pardoned<sub>SOCIAL-RELATION-DEINIT</sub>

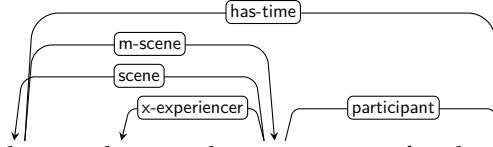
## 2.41 TIME

time indicates when, how often, or for how long has-time takes place. Also evoked by time expressions without arguments.

- (288) Kim swims<sub>UNANCHORED-MOTION</sub> on Monday
- (289) Kim sneezed<sub>EXPERIENCE</sub> twice
- (290) Kim swam<sub>UNANCHORED-MOTION</sub> for an hour
- (291) Kim says<sub>MESSAGE</sub> hello whenever I meet them



(292) Once<sub>TIME</sub> when I was six years old

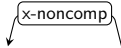


(293) the six months<sub>TIME</sub> they need<sub>SCENE-NECESSITY</sub> for digestion

## 2.42 NONCOMP

Used to mark syntactic arguments that are thought of as part of the predicate, as in verbal idioms, weather verbs, inherently reflexive verbs, or existential *there*.

(294) Kim kicked<sub>DESTRUCTION</sub> the bucket

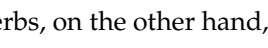


(295) It is raining<sub>STATE</sub>

(296) I address<sub>MESSAGE</sub> myself to you



(297) There was<sub>SCENE</sub> a famine



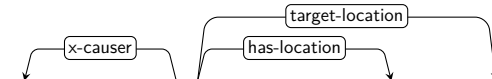
Light verbs, on the other hand, are treated with SCENE, see Section 2.1.

## 3 Memos

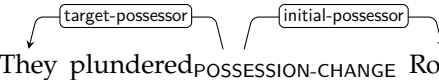
### 3.1 Prefer Core over Non-core Arguments

When an argument fills both a core and a non-core role, it is more important to annotate the former.

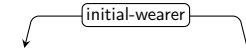
(298) Kim drove<sub>LOCATION-CHANGE</sub> to Boston



(299) Kim drove<sub>LOCATION-CHANGE</sub> the car to Boston



(300) They plundered<sub>POSSESSION-CHANGE</sub> Rome

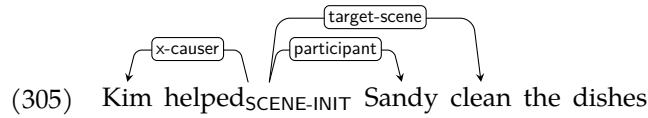
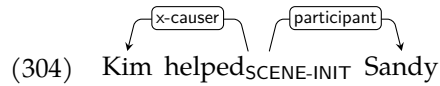
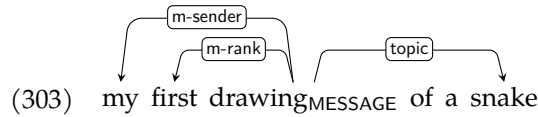
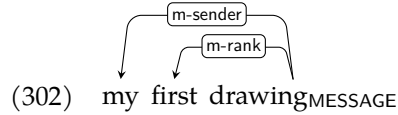


(301) Kim undressed<sub>WRAPPING-WEARING-DEINIT</sub>

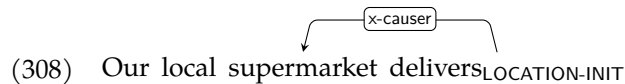
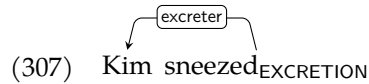
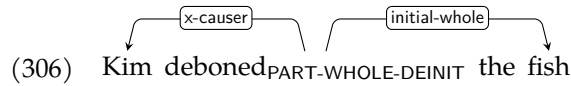


### 3.2 Arguments Determine Frames

The most important criterion in choosing a frame for a predicate is that there should be suitable roles for the predicate’s arguments, even if they are unrealized (implicit) in the annotated instance. For example, while *drawing* denotes a CLASS of things, it can occur with a prepositional argument denoting a topic, so MESSAGE is a better choice.

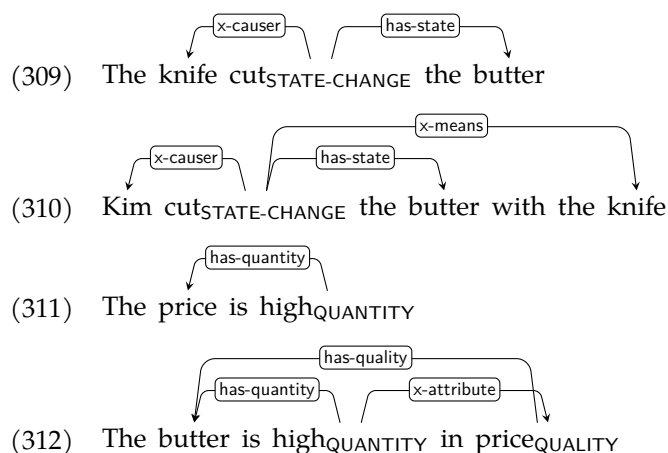


This logic extends to *shadow arguments* and *default arguments* (Pustejovsky, 1995; Di Fabio et al., 2019), i.e., arguments that do not appear in the syntactic argument structure because they are incorporated into the predicate or logically implied, like the bones in (306), mucus and air in (307), or groceries in (308).



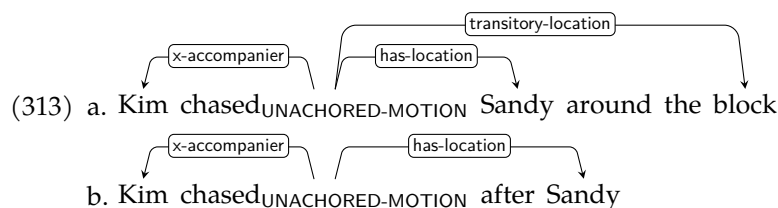
### 3.3 A Participant whose Syntactic Argument Position is Occupied Should Not Be Treated like an Implicit Argument

For example, consider (309), Here, *The knife* occupies the subject position and should be treated as the causer of the cutting. We could add the person handling the knife as the causer, and treat the knife as an instrument. However, to add the former to the sentence, we would not merely have to add another realized argument, but also change the syntactic argument structure so that the subject position goes to that causer, as in (310). Thus, we treat this as a different framing with a different causer, rather than a more explicit version of the same framing. Likewise, (311) and (312) are two different framings, one with *price* as has-state, and one with *butter*.



### 3.4 When in Doubt, Treat Different Syntactic Frames of the Same Predicate Consistently

For example, in (313-a), *chase* could be framed as caused motion with Kim as x-causer or as accompanied motion with Kim as x-accompanier. Because the latter works for other syntactic frames of *chase* as well, as in (313-b), prefer it.

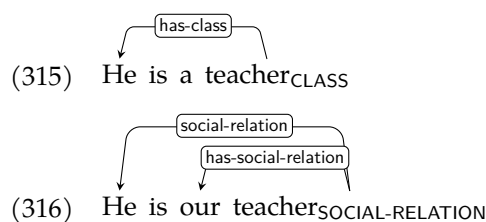


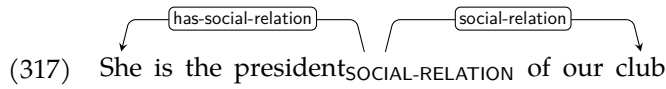
### 3.5 Participant Nouns

Some nouns denote a person who participates in a specific type of scene in a specific type of role. In such cases, use the most appropriate frame for that scene. For example, in a narrative where the narrator has just been criticized by a stranger, you could annotate as follows:



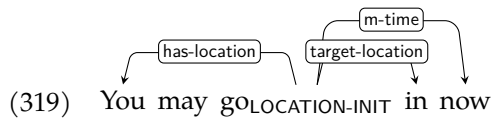
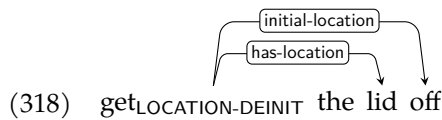
In other cases, such nouns rather denote a person's profession or expertise or their role in a social context:



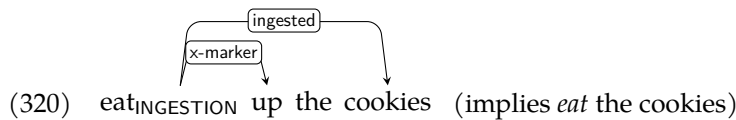


### 3.6 Particle Verbs

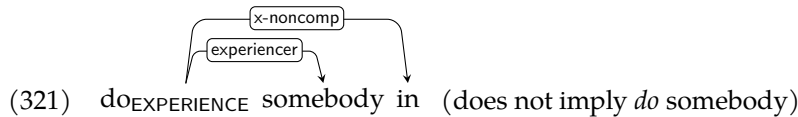
In UD, particle verbs are connected to their particle via the `compound:prt` relation. If the meaning is spatial, this dependency is labeled with `initial-location` or `target-location`.



In semi-non-compositional particle verbs, where the particle adds a partially predictable but nonspatial meaning to the verb, use an appropriate role, e.g., `x-marker` if the meaning is aspectual.



In fully non-compositional particle verbs, where the meaning is not predictable, use `x-noncomp`.



refer to PARSEME guidelines

## 4 TODO

The butter is high in price: high has SCENE-like arguments (participant butter and price scene), but also expresses a QUANTITY. SCENE-QUANTITY?

A whole section on sentence adverbs: lieber (MESSAGE), sowieso (CONDITION), ungeachtet (CONCESSION), erstmals (TIME), unvermindert (QUANTITY-CONTINUATION)

Speaker-oriented adverbs: MESSAGE? erstaunlicherweise, geheimnisvollerweise, glücklicherweise, möglicherweise, notwendigerweise, tragischerweise, unglaublicherweise (MESSAGE-INIT-NEG?), unglücklicherweise, zweckmäßigerweise?

codify the general principle somewhere: if superframe and ARG1 have the

same name (quasi-unary relations), we can just use m-rel. Otherwise, use m-scene.

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