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.

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.

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Superframe	Roles					Sec.
SCENE	**initial-scene**	**participant**	**scene**	**transitory-scene**	**target-scene**	**2.1**
IDENTIFICATION		**identified**	**identifier**			**2.2**
rank		has-rank	rank			??
CLASS	**initial-class**	**has-class**	**class**		**target-class**	**2.4**
EXISTENCE		**exists**				**2.5**
TRANSFORMATION-CREATION		material			created	2.6
REPRODUCTION		original			copy	2.7
QUALITY		**has-quality**	**quality**			**2.8**
STATE	**initial-state**	**has-state**	**state**		**target-state**	**2.9**
DESTRUCTION		destroyed				2.10
EXPERIENCE		**experiencer**	**experienced**			**2.11**
ACTIVITY		**is-active**	**activity**			**2.12**
MODE		**has-mode**	**mode**			**2.13**
FOCUS		**has-focus**	**focus**			**2.14**
ACCOMPANIMENT		**accompanied**	**accompanier**			**2.15**
DEPICTIVE		has-depictive	depictive			2.16
ATTRIBUTE		**has-attribute**	**attribute**			**2.17**
ASSET		**has-asset**	**asset**			**2.18**
CONTRAST		contrasted	reference			??
CONCESSION		assertion	conceded			2.20
EXPLANATION		**explained**	**explanation**			**2.21**
LOCATION	**initial-location**	**has-location**	**location**	**transitory-location**	**target-location**	**2.22**
WRAPPING-WEARING		worn	wearer			2.23
ADORNMENT-TARNISHMENT	initial-surface	ornament	surface		target-surface	2.24
HITTING		hitting	hit			2.25
INGESTION		ingested		transitory-location	ingester	2.26
EXCRETION	excreter	excreted		transitory-location		2.27
UNANCHORED-MOTION		has-location		transitory-location		2.28
MEANS		**has-means**	**means**			**2.29**
MESSAGE		**topic**	**content**			**2.30**
PART-WHOLE	**initial-whole**	**part**	**whole**		**target-whole**	**2.31**
POSSESSION	**initial-possessor**	**possessed**	**possessor**		**target-possessor**	**2.32**
QUANTITY		**has-quantity**	**quantity**			**2.33**
SENDING		**sent**	**sender**			**2.34**
SEQUENCE		**follows**	**followed**			**2.35**
CAUSATION		result	causer			2.36
REACTION		reaction	trigger			2.37
RESULTATIVE		has-resultative	resultative			2.38
CONDITION		has-condition	condition			2.39
EXCEPTION		has-excpetion	exception			2.40
SOCIAL-RELATION	**initial-social-relation**	**has-social-relation**	**social-relation**		**target-social-relation**	**2.41**
TIME		**has-time**	**time**			**2.42**
NONCOMP		**has-noncomp**	**noncomp**			**2.43**

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.

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 an experience or an activity:

(1)   Kim is sleeping$_{\text{EXPERIENCE}}$
        [:experiencer]

(2)   Kim is partying$_{\text{ACTIVITY}}$
        [:is-active]

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

(3)   Kim owns$_{\text{POSSESSION}}$ a house
    [:possessor] [:possession]

(4)   The house belongs$_{\text{POSSESSION}}$ to Kim
    [:possession] [:possessor]

(5)   Kim seems$_{\text{MESSAGE}}$ happy
    [:topic] [:content]

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, continuation (-CONTINUATION) means a state persists or is even intensified, and prevention (-PREVENTION) means it fails to begin. Accordingly, roles with prefix target-, initial-, or transitory-

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mark participants at/beyond the end of, at the beginning of, or at some point during the event, respectively.

(6)   Kim got$_{\text{POSSESSION-INIT}}$ the house
  :target-possessor :possession

(7)   Kim lost$_{\text{POSSESSION-DEINIT}}$ the house
  :initial-possessor :posesssion

(8)   Kim sold$_{\text{POSSESSION-CHANGE}}$ the house to Sandy
  :initial-possessor :target-possessor :possession

(9)   Kim kept$_{\text{POSSESSION-CONTINUATION}}$ the house
  :initial-possessor :possession

(10)   Kim went$_{\text{LOCATION-CHANGE}}$ from Chicago via Pittsburgh to Boston
  :has-location :initial-location :transitory-location :target-location

(11)   The vase fell$_{\text{LOCATION-CHANGE}}$ to the ground
  :has-location :target-location

(12)   The vase broke$_{\text{STATE-CHANGE}}$
  :has-state

(13)   Kim befriended$_{\text{SOCIAL-RELATION-INIT}}$ Sandy
  :has-social-relation :target-social-relation

(14)   Kim married$_{\text{SOCIAL-RELATION-INIT}}$ Sandy
  :has-social-relation :target-social-relation

(15)   Kim divorced$_{\text{SOCIAL-RELATION-DEINIT}}$ Sandy
  :has-social-relation :initial-social-relation

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$_{\text{SCENE-INIT}}$
  :target-scene

(17)   The concert continued$_{\text{SCENE-CONTINUATION}}$
  :initial-scene

(18)   The concert finished$_{\text{SCENE-DEINIT}}$
  :initial-scene

(19) The shouting intensified_{SCENE-CONTINUATION}

[arc: :initial-scene]

(19) The shouting intensified$_{\text{SCENE-CONTINUATION}}$ (:initial-scene)

(20) The shouting faded$_{\text{SCENE-DEINIT}}$ (:initial-scene)

(21) A coup was attempted$_{\text{SCENE-INIT}}$ (:target-scene)

(22) Kim finished$_{\text{SCENE-DEINIT}}$ their work   (:participant) (:initial-scene)

(23) Swift action prevented$_{\text{SCENE-PREVENTION}}$ an outbreak   (:x-causer) (:target-scene)

(24) Kim refrained$_{\text{SCENE-PREVENTION}}$ from going   (:participant) (:target-scene)

(25) Kim prevented$_{\text{SCENE-PREVENTION}}$ Sandy from going   (:x-causer) (:participant) (:target-scene)

(26) Kim saved$_{\text{SCENE-PREVENTION}}$ Sandy from the dragon   (:x-causer) (:participant) (:target-scene)

In the last example, *dragon* is to be understood metonymically as a scene in which Sandy would have been harmed by the dragon.
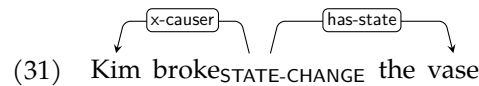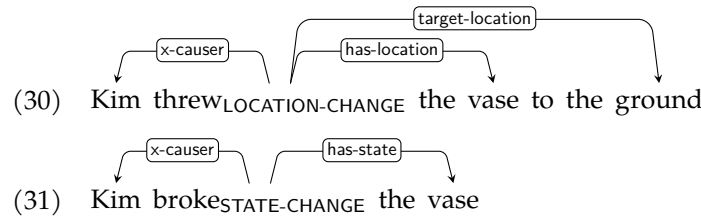
In addition, we use the modal suffixes -NECESSITY and -POSSIBILITY. They can combine with aspectual suffixes.

(27) Change is necessary$_{\text{SCENE-NECESSITY}}$ (:target-scene)

(28) Change is possible$_{\text{SCENE-POSSIBILITY}}$ (:target-scene)

(29) Kim owes$_{\text{POSSESSION-CHANGE-NECESSITY}}$ Sandy money   (:initial-possessor) (:target-possessor) (:possessed)
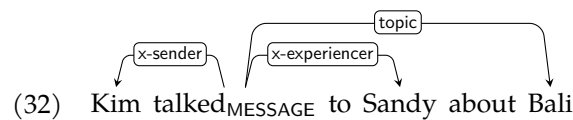
1.3 Non-core Arguments

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
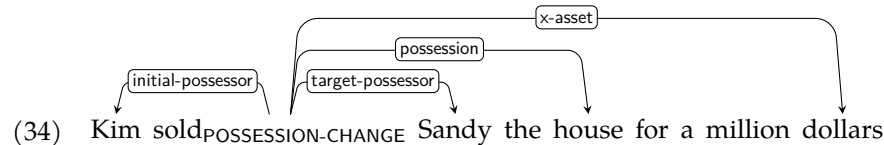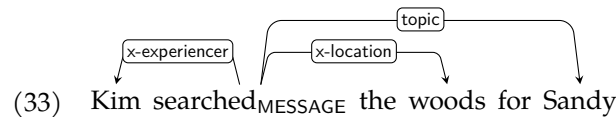
scene as the result. We denote this by giving *Kim* the causer role label, with an x- prefix to mark it as a non-core role.

(30)   Kim threw_{LOCATION-CHANGE} the vase to the ground
        [x-causer] [has-location] [target-location]

(31)   Kim broke_{STATE-CHANGE} the vase
        [x-causer] [has-state]

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

(32)   Kim talked_{MESSAGE} to Sandy about Bali
        [x-sender] [x-experiencer] [topic]

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

(33)   Kim searched_{MESSAGE} the woods for Sandy
        [x-experiencer] [x-location] [topic]

(34)   Kim sold_{POSSESSION-CHANGE} Sandy the house for a million dollars
        [initial-possessor] [target-possessor] [possession] [x-asset]

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-.

(35)   Kim is sweating_{EXCRETION} profusely in the sauna
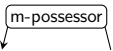   [excreter] [m-quantity] [m-location]
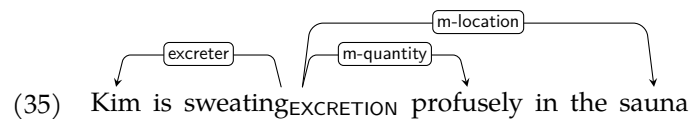
1.5 Nonverbal Predicates

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, marking 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:
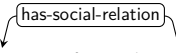
(36)   a tree_{CLASS} in the garden
        [m-location]
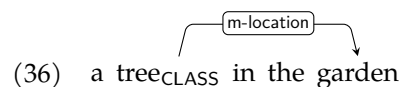
(37) Kim 's tree_CLASS
    [m-possessor]

Event nouns evoke event frames and have arguments:

(38) Kim 's breaking_STATE-CHANGE of the vase
    [x-causer] [has-state]

Relational nouns evoke relational frames and have arguments:

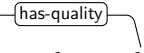(39) Kim 's friend_SOCIAL-RELATION
    [has-social-relation]

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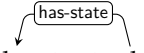
(40) Kim_IDENTIFICATION

(41) they_IDENTIFICATION

Predicate adjectives most typically denote states or qualities.
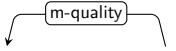
(42) I am despicable_QUALITY
    [has-quality]

(43) the dog is tired_STATE
    [has-state]

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

(44) despicable me_IDENTIFICATION
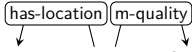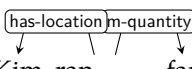   [m-quality]

(45) the tired dog_CLASS
    [m-state]

Similarly for adverbs denoting, e.g, manner (quality) or extent (quantity):
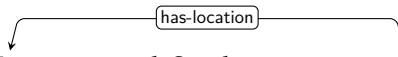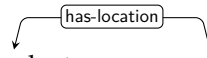
(46) Kim ran_Motion fast
    [has-location][m-quality]
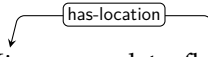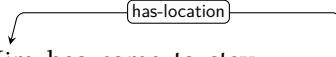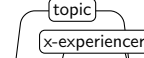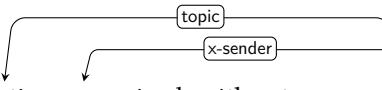
(47) Kim ran_Motion far
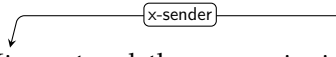   [has-location][m-quantity]

1.6 Control Relations

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

(48) Kim promised Sandy to come$_{\text{LOCATION-CHANGE}}$ (subject control)
[has-location]

(49) Kim persuaded Sandy to come$_{\text{LOCATION-CHANGE}}$ (object control)
[has-location]

(50) Kim seemed to fly$_{\text{Motion}}$ (raising)
[has-location]

(51) Kim entered the room singing$_{\text{MESSAGE}}$ (depictive)
[x-sender]

(52) You're talking me silly$_{\text{STATE}}$ (resultative)
[has-state]

(53) Kim has come to stay$_{\text{LOCATION-CONTINUATION}}$ (subjectless adverbial clause)
[has-location]

(54) Kim left after trashing$_{\text{STATE-CHANGE}}$ the room (subjectless adverbial clause)
[x-causer] [has-state]

(55) Kim is hard to love$_{\text{MESSAGE}}$ (*tough* construction)
[topic]

(56) the song I like$_{\text{MESSAGE}}$ (relative clause)
[topic] [x-experiencer]

(57) the question we raised without answering$_{\text{MESSAGE}}$ (parasitic gap)
[topic] [x-sender]

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$_{\text{LOCATION-CHANGE} \gg \text{SCENE}}$ over the group
      [has-location » scene]   [transitory-location » participant]

(59) Kim refused$_{\text{MESSAGE} \gg \text{SCENE}}$ to eat
      [x-sender » participant]   [topic » scene]

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

(60) primeval forest$_{\text{CLASS}}$
      [m-time » m-noncomp]

(61) colored pencil$_{\text{CLASS}}$
      [m-quality » m-noncomp]

(62) to lay$_{\text{LOCATION-CHANGE} \gg \text{MESSAGE-DEINIT}}$ aside my drawings
      [has-location » topic]   [target-location » x-noncomp]

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$_{\text{MESSAGE}}$ began$_{\text{SCENE-INIT}}$
      [target-scene]

(64) The concert$_{\text{MESSAGE}}$ continued$_{\text{SCENE-CONTINUATION}}$
      [initial-scene]

(65) The concert$_{\text{MESSAGE}}$ finished$_{\text{SCENE-DEINIT}}$
      [initial-scene]

(66) The shouting$_{\text{MESSAGE}}$ intensified$_{\text{SCENE-CONTINUATION}}$
      [initial-scene]

(67) The shouting$_{\text{MESSAGE}}$ faded$_{\text{SCENE-DEINIT}}$
      [initial-scene]

(68) A coup$_{\text{EXPERIENCE}}$ was attempted$_{\text{SCENE-INIT}}$
      [target-scene]

(69) Kim finished_{SCENE-DEINIT} their work_{ACTIVITY}

Arcs: is-active, participant, initial-scene

(70) Swift action prevented_{SCENE-PREVENTION} an outbreak_{SCENE-INIT} of measles_{EXPERIENCE}

Arcs: x-causer, target-scene, target-scene

(71) Kim refrained_{SCENE-PREVENTION} from going_{LOCATION-CHANGE}

Arcs: has-location, participant, target-scene

(72) Kim prevented_{SCENE-PREVENTION} Sandy from going_{LOCATION-CHANGE}

Arcs: x-causer, target-scene, participant, has-location

(73) Kim saved_{SCENE-PREVENTION} Sandy from the dragon_{CLASS}

Arcs: x-causer, target-scene, participant, x-experiencer

(74) Kim plays_{SCENE} tennis_{ACTIVITY}

Arcs: is-active, participant, scene

(75) Kim used_{SCENE} to play_{SCENE} tennis_{ACTIVITY}

Arcs: is-active, participant, participant, scene, scene

(76) Kim gave_{SCENE} Sandy a kick_{HITTING}

Arcs: x-causer, scene, participant, hit

The modifier relation m-scene is used when a syntactic dependeny points from an argument to a predicate, as, e.g., with relative clauses or sentence adverbs that are not already covered by a frame such as MODE or FOCUS.

(77) the clown_{CLASS} I saw_{MESSAGE} smiled

Arcs: m-scene, topic, x-experiencer

(78) Fortunately_{EXPERIENCE} for Sandy , Kim is here_{LOCATION}

Arcs: experienced, m-scene, experiencer, has-location

2.2 IDENTIFICATION

identifier identifies identified.

Evoked by pronouns, names, and other identifiers, as well as predicates denoting naming relationships.
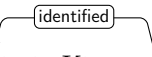
(79)   I_{IDENTIFICATION} saw a picture

(80)   I can distinguish China_{IDENTIFICATION} from Arizona

(81)   a book called_{IDENTIFICATION} True Stories from Nature
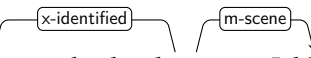
(82)   This is Kim_{IDENTIFICATION}

Predicates that evoke other frames can still use x-identified to mark the copula subject as identified:
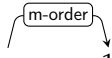
(83)   This is the book_{MESSAGE} I like
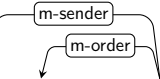
2.3 ORDER

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

(84)   Chapter_{MESSAGE} 1

(85)   my first drawing_{MESSAGE}

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_{CLASS}

2.5 EXISTENCE

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

(87)   I exist_{EXISTENCE}

(88) There is$_{\text{EXISTENCE}}$ a hill
[x-expletive, exists]

(89) There is$_{\text{SCENE}}$ a hubbub
[x-expletive, scene]

2.6 TRANSFORMATION-CREATION

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

(90) I succeeded in making$_{\text{Transformation-Creation}}$ my first drawing
[x-causer, created]

(91) Kim built$_{\text{Transformation-Creation}}$ a castle out of sand
[x-causer, created, material]

(92) Kim turned$_{\text{Transformation-Creation}}$ straw into gold
[x-causer, created, material]

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$_{\text{Reproduction}}$ of the drawing
[original]

(94) This is a translation$_{\text{Reproduction}}$ of the pamphlet into English
[copy, original, x-quality]

2.8 QUALITY

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

(95) when I was six years old$_{\text{QUALITY}}$
[has-quality, x-quantity]

(96) a magnificent picture$_{\text{MESSAGE}}$
[m-quality]

(97) I pondered$_{\text{MESSAGE}}$ deeply over the adventures of the jungle
[x-experiencer, m-quality, topic]

2.9 STATE

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

(98)   Boa constrictors swallow their prey whole_STATE   [has-state]

(99)   they sleep_STATE   [has-state]

(100)   they swallow their prey whole without chewing_STATE-CHANGE it   [x-causer] [has-state]

(101)   the six months that they need for digestion_STATE-CHANGE   [x-causer]

(102)   And that hasn't much improved_STATE-CHANGE my opinion of them   [x-causer] [has-state]

2.10 DESTRUCTION

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

(103)   Sam 's death_Destruction   [destroyed]

(104)   Sam 's destruction_Destruction of the city   [x-causer]

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.

(105)   Kim 's adventures_EXPERIENCE in the jungle   [experiencer] [m-location]

(106)   Kim attacked_EXPERIENCE Sandy   [x-causer] [experiencer]

(107)   I saw_MESSAGE a magnificent picture   [x-experiencer] [topic]

(108)   I pondered_MESSAGE deeply   [x-experiencer] [m-quality]

14

(109) Kim talked$_\text{MESSAGE}$ to Sandy

x-sender, x-experiencer

(110) Kim did$_\text{SCENE}$ something nice for Sandy

participant, scene, m-experiencer

(111) Kim cooked a meal only to have$_\text{SCENE}$ Sandy spurn it

x-experiencer, scene, participant

(112) Kim managed$_\text{EXPERIENCE}$ with dealing the cards

experiencer, experienced

(113) Die Piroggen waren Maria zu dunkel geraten$_\text{SCENE-INIT}$

participant, x-experiencer, target-scene

(114) Das hat mir gerade noch gefehlt$_\text{EXPERIENCE}$

experienced, x-noncomp, experiencer, x-noncomp, x-noncomp

For more uses, see MESSAGE (Section 2.30).

2.12 ACTIVITY

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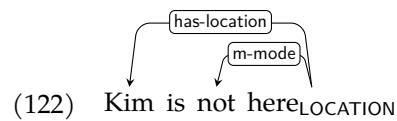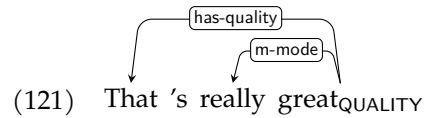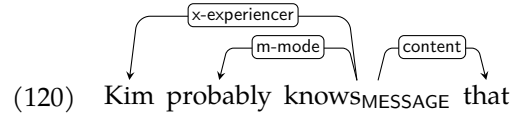
Used for dynamic scenes where is-active has agency and that cannot well be framed as a state change.

(115) Kim worked$_\text{ACTIVITY}$

is-active

(116) Kim partied$_\text{ACTIVITY}$

is-active

(117) Kim had sex$_\text{ACTIVITY}$

is-active

(118) after some work$_\text{ACTIVITY}$ with a colored pencil

m-means

(119) I devoted myself to geography$_\text{ACTIVITY}$
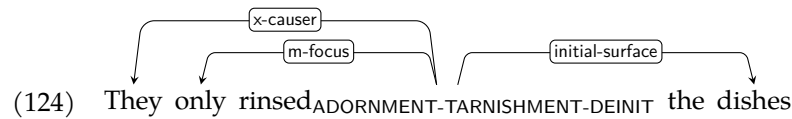
is-active

15

2.13 MODE

Used to mark modal modifiers, including what UMR calls *modal strength*.

(120) Kim probably knows_{MESSAGE} that

(121) That 's really great_{QUALITY}

(122) Kim is not here_{LOCATION}

2.14 FOCUS

Used to mark focus particles such as *only* and *even*.

(123) Even Kim_{IDENTIFICATION} did n't know that

(124) They only rinsed_{ADORNMENT-TARNISHMENT-DEINIT} the dishes

2.15 ACCOMPANIMENT

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

(125) veggies_{CLASS} with rice

(126) The veggies come_{ACCOMPANIMENT} with rice

(127) Kim added_{ACCOMPANIMENT-INIT} rice to the veggies

(128) Rolling thunder accompanies_{ACCOMPANIMENT} the rain
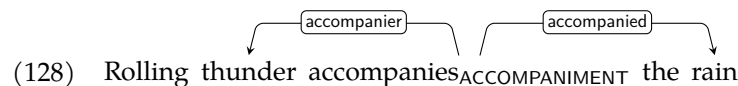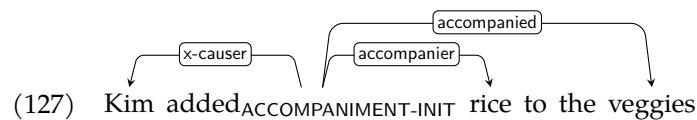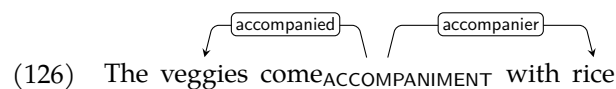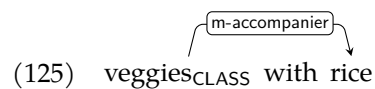
Often, the accompanier denotes not the accompanying scene but an entity participating in it, and must be metonymically understood as the scene.

(129) Kim cycled$_{\text{LOCATION-CHANGE}}$ to Rome with Sandy

Annotations: m-accompanier, target-location

(130) Kim danced$_{\text{ACTIVITY}}$ with Sandy

Annotations: is-active, x-accompanier

(131) Kim had$_{\text{SCENE}}$ sex with Sandy

Annotations: participant, scene, x-accompanier

(132) Kim chased$_{\text{Motion}}$ Sandy around the block

Annotations: x-accompanier, has-location, transitory-location

(133) Kim accompanied$_{\text{ACCOMPANIMENT}}$ Sandy

Annotations: x-accompanier, accompanied

(134) Kim accompanied$_{\text{ACCOMPANIMENT}}$ Sandy on the piano

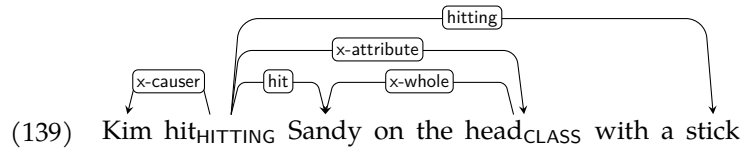Annotations: x-accompanier, accompanied, x-means

2.16 DEPICTIVE

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

(135) Kim entered$_{\text{LOCATION-INIT}}$ the room singing$_{\text{MESSAGE}}$

Annotations: has-location, target-location, m-depictive, x-sender

2.17 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.

(136) Kim exceeds$_{\text{COMPARISON}}$ Sandy in height$_{\text{QUALITY}}$

Annotations: compared, reference, has-quality, x-attribute, has-quality

(137) That is great$_{\text{QUALITY}}$ in terms of ROI$_{\text{QUALITY}}$

Annotations: has-quality, m-attribute, has-quality

(138) Kim ist auf den Kopf$_{CLASS}$ gefallen$_{HITTING}$

with labels: hitting, x-whole, x-attribute

(139) Kim hit$_{HITTING}$ Sandy on the head$_{CLASS}$ with a stick
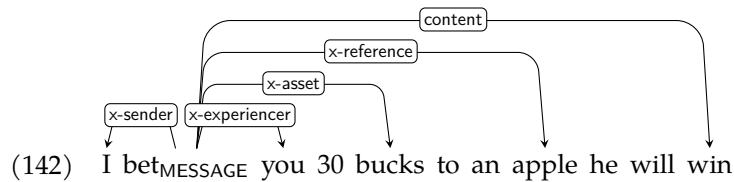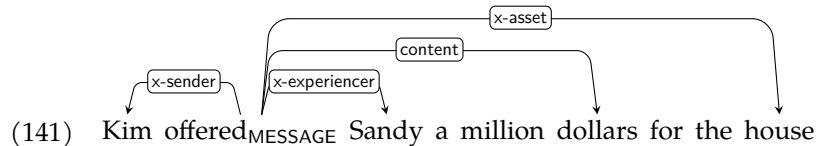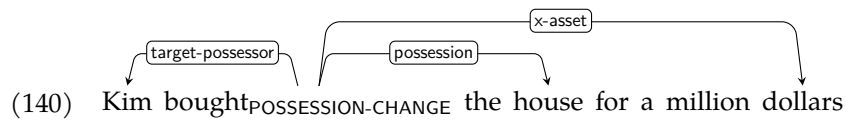
with labels: hitting, x-causer, x-attribute, hit, x-whole
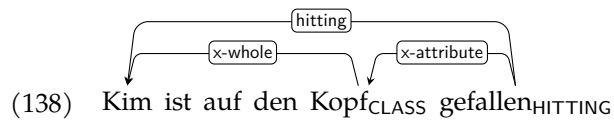
Control relations?

2.18 ASSET

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

(140) Kim bought$_{POSSESSION\text{-}CHANGE}$ the house for a million dollars

with labels: target-possessor, possession, x-asset

(141) Kim offered$_{MESSAGE}$ Sandy a million dollars for the house

with labels: x-sender, x-experiencer, content, x-asset

(142) I bet$_{MESSAGE}$ you 30 bucks to an apple he will win

with labels: x-sender, x-experiencer, x-asset, x-reference, content

2.19 COMPARISON

compared is characterized with respect to reference.

Examples of comparing scenes:

(143) Compared to Sandy, Kim is tall$_{QUALITY}$

with labels: m-reference, has-quality

(144) Sandy is short$_{QUALITY}$ whereas Kim is tall

with labels: has-quality, m-comparison

(145) They demonize$_{MESSAGE}$ the left while doing nothing about the right

with labels: x-sender, topic, m-reference
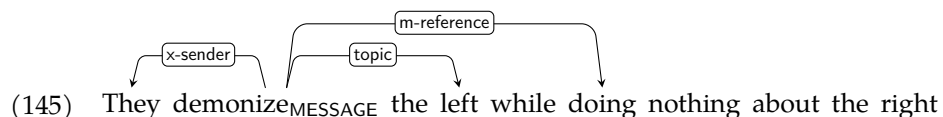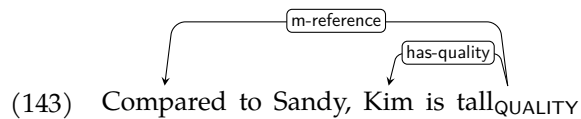
Examples of comparing non-scene entities:

18

(146) Kim outranks_{COMPARISON} Sandy
[arcs: compared, reference]

(147) Kim exceeds_{COMPARISON} Sandy in height
[arcs: compared, reference, x-attribute]

(148) The Polish restaurant compared_{COMPARISON} favorably to the Spanish one
[arcs: compared, x-quality, reference]

(149) Kim compared_{COMPARISON} Coke to Pepsi
[arcs: x-experiencer, compared, reference]

(150) Kim ran_{COMPARISON} afoul of Fielding 's constraints
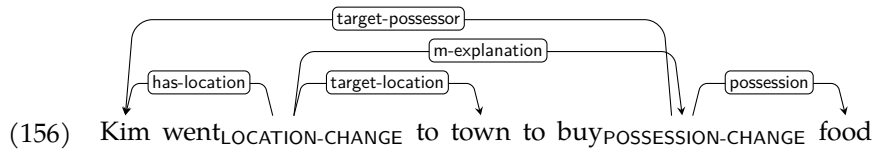*[arcs: compared, x-noncomp, reference]*

2.20 CONCESSION

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

(151) Kim went_{LOCATION-CHANGE} out despite the rain
[arcs: has-location, target-location, m-conceded]

(152) It rained_{STATE} , but Kim went went out
[arcs: x-expletive, m-asserted]

(153) Kim sent_{SENDING} Sandy a letter but it never arrived
[arcs: sender, x-experiencer, sent, m-asserted]

(154) Kim came_{LOCATION-CHANGE} although Sandy had told them not to
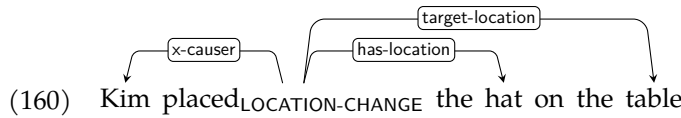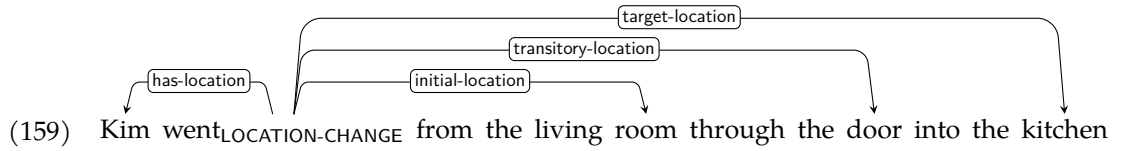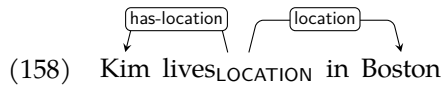*[arcs: has-location, m-conceded]*

2.21 EXPLANATION

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

(155) I am stressing_{MESSAGE} this because it is important
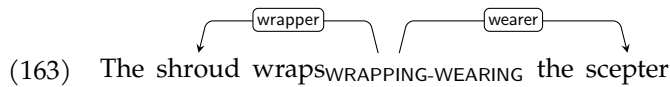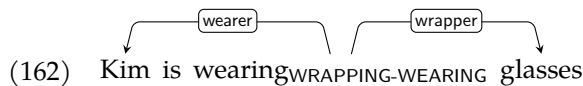*[arcs: x-sender, topic, m-explanation]*

(156) Kim went$_{\text{LOCATION-CHANGE}}$ to town to buy$_{\text{POSSESSION-CHANGE}}$ food

Arc labels above (156): target-possessor, m-explanation, has-location, target-location, possession

2.22 LOCATION

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

(157) the hat$_{\text{CLASS}}$ in the box

Arc label: m-location

(158) Kim lives$_{\text{LOCATION}}$ in Boston

Arc labels: has-location, location

(159) Kim went$_{\text{LOCATION-CHANGE}}$ from the living room through the door into the kitchen

Arc labels: target-location, transitory-location, has-location, initial-location

(160) Kim placed$_{\text{LOCATION-CHANGE}}$ the hat on the table

Arc labels: target-location, x-causer, has-location

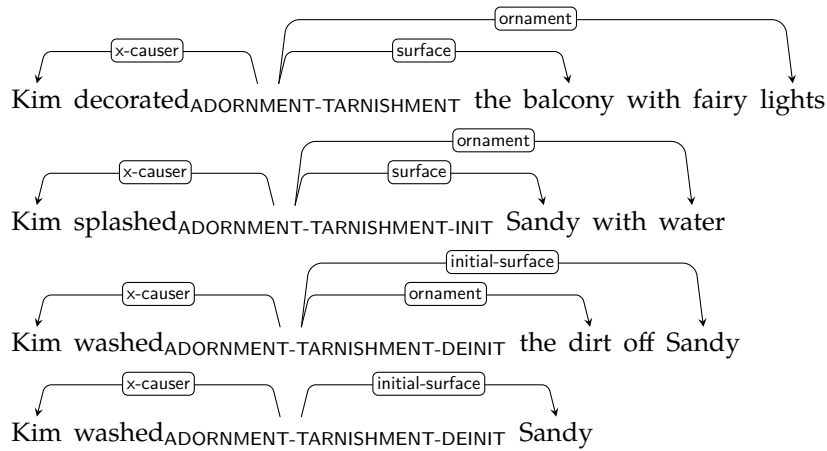## 2.23 WRAPPING-WEARING

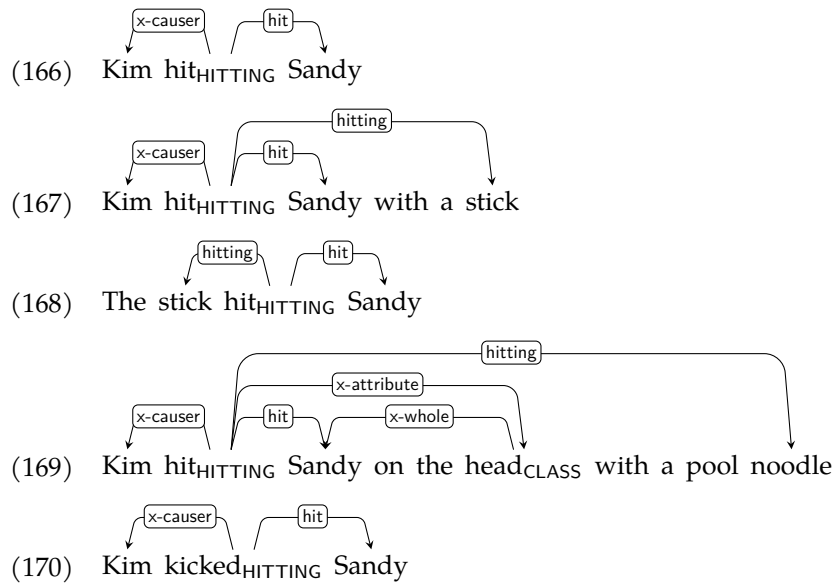Special case of LOCATION where wearer (aka location) wears or is wrapped in wrapper (aka has-location).

(161) Kim is wearing$_{\text{WRAPPING-WEARING}}$ a shirt

Arc labels: wearer, wrapper

(162) Kim is wearing$_{\text{WRAPPING-WEARING}}$ glasses

Arc labels: wearer, wrapper

(163) The shroud wraps$_{\text{WRAPPING-WEARING}}$ the scepter

Arc labels: wrapper, wearer

(164) Kim put$_{\text{WRAPPING-WEARING-INTI}}$ on a sweater

Arc labels: target-wearer, wrapper

(165) Kim took$_{\text{WRAPPING-WEARING-DEINIT}}$ off their glasses

Arc labels: initial-wearer, wrapper

2.24 ADORNMENT-TARNISHMENT

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

Kim decorated_ADORNMENT-TARNISHMENT the balcony with fairy lights
(x-causer, surface, ornament)

Kim splashed_ADORNMENT-TARNISHMENT-INIT Sandy with water
(x-causer, surface, ornament)

Kim washed_ADORNMENT-TARNISHMENT-DEINIT the dirt off Sandy
(x-causer, ornament, initial-surface)

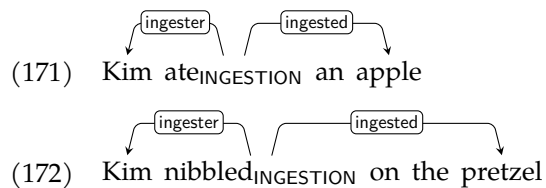Kim washed_ADORNMENT-TARNISHMENT-DEINIT Sandy
(x-causer, initial-surface)

2.25 HITTING

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

(166) Kim hit_HITTING Sandy
(x-causer, hit)

(167) Kim hit_HITTING Sandy with a stick
(x-causer, hit, hitting)

(168) The stick hit_HITTING Sandy
(hitting, hit)

(169) Kim hit_HITTING Sandy on the head_CLASS with a pool noodle
(x-causer, hit, x-attribute, x-whole, hitting)

(170) Kim kicked_HITTING Sandy
(x-causer, hit)

2.26 INGESTION

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

(171) Kim ate_INGESTION an apple
(ingester, ingested)
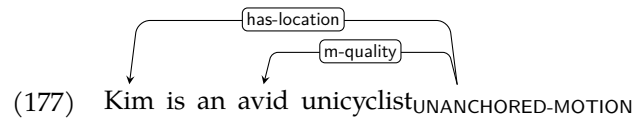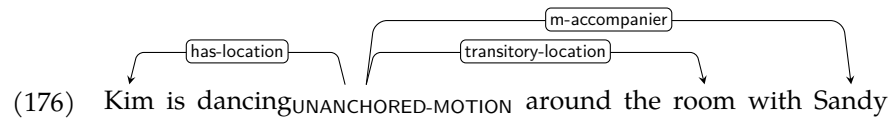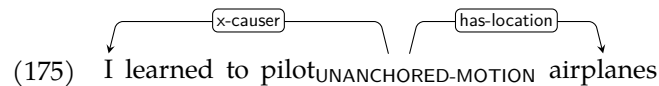
(172) Kim nibbled_INGESTION on the pretzel
(ingester, ingested)

2.27 EXCRETION

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

(173) Kim threw$_{\text{EXCRETION}}$ up the pretzel
(annotations: excreter, excreted)
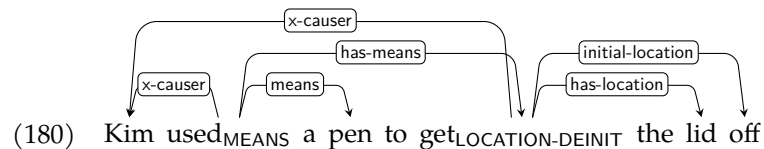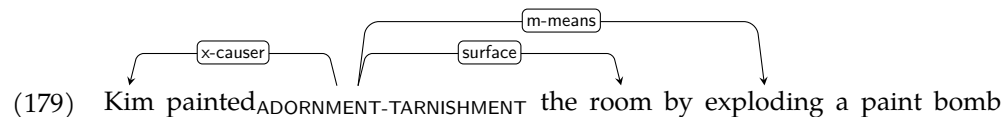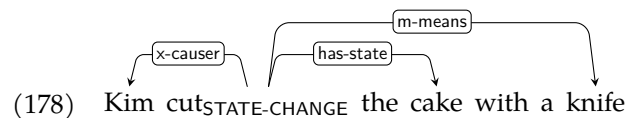
2.28 UNANCHORED-MOTION

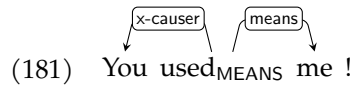Special case of LOCATION-CHANGE where no initial or target location is indicated.

(174) Kim is running$_{\text{UNANCHORED-MOTION}}$ along the river
(annotations: has-location, transitory-location)

(175) I learned to pilot$_{\text{UNANCHORED-MOTION}}$ airplanes
(annotations: x-causer, has-location)

(176) Kim is dancing$_{\text{UNANCHORED-MOTION}}$ around the room with Sandy
(annotations: m-accompanier, transitory-location, has-location)

(177) Kim is an avid unicyclist$_{\text{UNANCHORED-MOTION}}$
(annotations: has-location, m-quality)

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

2.29 MEANS

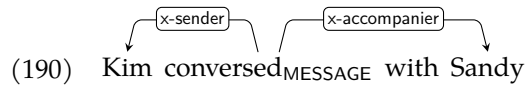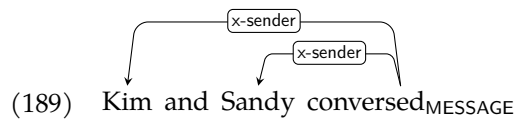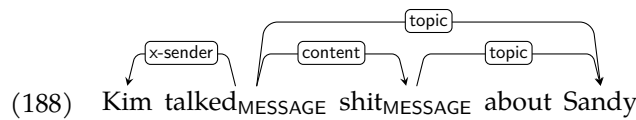has-means is a scene caused by something via an intermediary means.

(178) Kim cut$_{\text{STATE-CHANGE}}$ the cake with a knife
(annotations: x-causer, m-means, has-state)

(179) Kim painted$_{\text{ADORNMENT-TARNISHMENT}}$ the room by exploding a paint bomb
(annotations: x-causer, m-means, surface)

(180) Kim used$_{\text{MEANS}}$ a pen to get$_{\text{LOCATION-DEINIT}}$ the lid off
(annotations: x-causer, x-causer, has-means, means, initial-location, has-location)

(181) You used$_{\text{MEANS}}$ me !

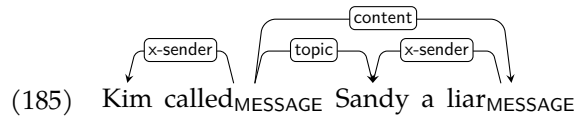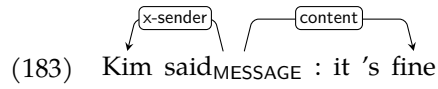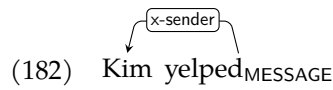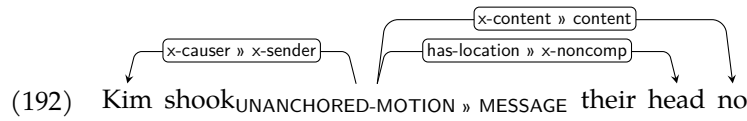with arcs: x-causer (You → used), means (used → me)

2.30 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.
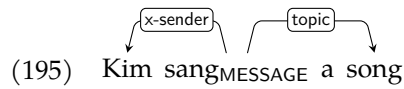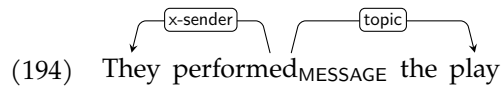
2.30.1 Expression

(182) Kim yelped$_{\text{MESSAGE}}$

with arc: x-sender

(183) Kim said$_{\text{MESSAGE}}$: it 's fine

with arcs: x-sender, content

(184) Kim said$_{\text{MESSAGE}}$ it was fine

with arcs: x-sender, content

(185) Kim called$_{\text{MESSAGE}}$ Sandy a liar$_{\text{MESSAGE}}$

with arcs: x-sender, content, topic, x-sender

(186) Kim told$_{\text{MESSAGE}}$ Sandy a secret

with arcs: x-sender, x-experiencer, content

(187) Kim talked$_{\text{MESSAGE}}$ about Sandy

with arcs: x-sender, topic

(188) Kim talked$_{\text{MESSAGE}}$ shit$_{\text{MESSAGE}}$ about Sandy

with arcs: x-sender, content, topic, topic

(189) Kim and Sandy conversed$_{\text{MESSAGE}}$

with arcs: x-sender, x-sender

(190) Kim conversed$_{\text{MESSAGE}}$ with Sandy

with arcs: x-sender, x-accompanier

2.30.2 Gesture

(191) Kim curtseyed$_{\text{MESSAGE}}$ to the Queen

with arcs: x-sender, x-experiencer

(192) Kim shook$_{\text{UNANCHORED-MOTION » MESSAGE}}$ their head no

x-causer » x-sender
x-content » content
has-location » x-noncomp

2.30.3 Performance

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

(193) Kim played$_{\text{MESSAGE}}$ a little tune on their tuba
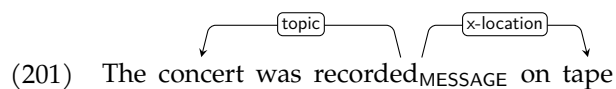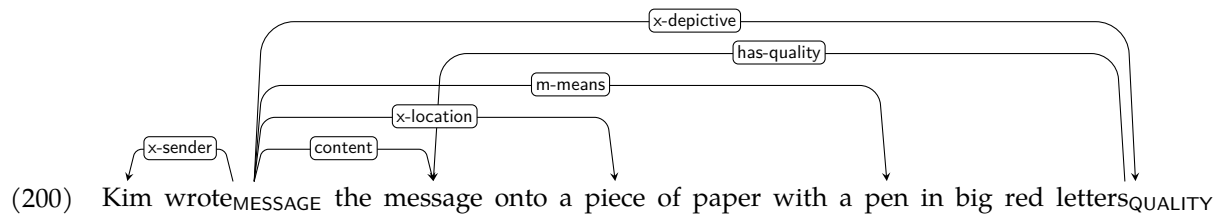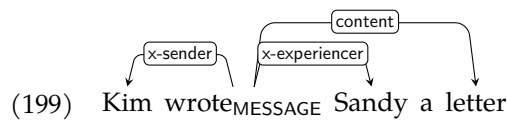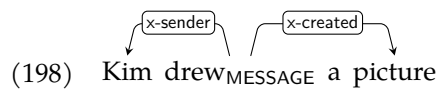
x-sender
topic
x-means

(194) They performed$_{\text{MESSAGE}}$ the play

x-sender
topic

(195) Kim sang$_{\text{MESSAGE}}$ a song

x-sender
topic

2.30.4 Depiction

(196) Kim drew$_{\text{MESSAGE}}$ a heron

x-sender
topic

(197) a picture$_{\text{MESSAGE}}$ of the heron

topic

2.30.5 Recording

(198) Kim drew$_{\text{MESSAGE}}$ a picture

x-sender
x-created

(199) Kim wrote$_{\text{MESSAGE}}$ Sandy a letter

x-sender
x-experiencer
content

(200) Kim wrote$_{\text{MESSAGE}}$ the message onto a piece of paper with a pen in big red letters$_{\text{QUALITY}}$

x-sender
content
x-location
m-means
has-quality
x-depictive

(201) The concert was recorded$_{\text{MESSAGE}}$ on tape

topic
x-location

(202) The band recorded_MESSAGE an album
[x-sender, x-created]

2.30.6 Perception

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

(203) Kim saw_MESSAGE a flower
[x-experiencer, topic]

(204) Kim found_MESSAGE the flower beautiful_QUALITY
[x-experiencer, content, topic, has-quality]

(205) Kim thinks_MESSAGE Sandy is a liar
[x-experiencer, content]

(206) Kim thinks_MESSAGE Sandy a liar_MESSAGE
[x-experiencer, content, topic, x-sender]

(207) Kim saw_MESSAGE Sandy swim_UNANCHORED-MOTION
[x-experiencer, content, topic, has-location]

(208) Kim wants_MESSAGE to swim_UNANCHORED-MOTION
[x-experiencer, has-location, content]

(209) Kim wants_MESSAGE Sandy to swim_UNANCHORED-MOTION
[x-experiencer, content, topic, has-location]

(210) Kim seems_MESSAGE happy_MESSAGE
[x-experiencer, topic, content]

(211) Kim seems_MESSAGE happy_MESSAGE to Sandy
[x-experiencer, x-experiencer, topic, content]

(212) The Thought Police observed_MESSAGE Winston
[x-experiencer, topic]

(213) Kim studies_MESSAGE linguistics
[x-experiencer, topic]

(214) Sandy is a professor$_{\text{MESSAGE}}$ of linguistics

— x-experiencer, topic

(215) The jury found$_{\text{MESSAGE}}$ Kim guilty$_{\text{SCENE}}$ of the crime$_{\text{ACTIVITY}}$

— is-active, content, x-experiencer, topic, participant, scene

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

(216) Kim noticed$_{\text{MESSAGE-INIT}}$ the bird

— x-experiencer, topic

(217) Kim taught$_{\text{MESSAGE-INIT}}$ Sandy Spanish

— topic, x-sender, x-experiencer

(218) Kim measured$_{\text{MESSAGE-INIT}}$ the elasticity

— x-experiencer, topic

(219) Kim forgot$_{\text{MESSAGE-DEINIT}}$ everything they knew

— x-initial-experiencer, initial-content

(220) Kim forgot$_{\text{MESSAGE}}$ about the cake

— x-initial-experiencer, topic

(221) Kim forgot$_{\text{MESSAGE-PREVENTION}}$ to take the trash out

— x-experiencer, target-content

2.31 PART-WHOLE

part is part of whole.

(222) Kim 's leg$_{\text{CLASS}}$

— m-whole

(223) a man$_{\text{CLASS}}$ with a mustache

— m-part

(224) part$_{\text{PART-WHOLE}}$ of the year

— whole

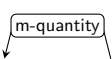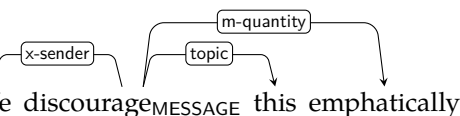(225) wheat contains$_{\text{PART-WHOLE}}$ gluten

— whole, part

2.32 POSSESSION

possessor possesses or controls the possessed.

(226) Kim 's house_CLASS
    [m-possessor]

(227) Kim owns_POSSESSION a house
    [possessor] [possessed]

(228) The house belongs_POSSESSION to Kim
    [possessed] [possessor]

(229) the owner_POSSESSION of the house
    [possessed]

(230) Kim has_POSSESSION Sandy 's phone
    [possessor] [possessed]

(231) Kim bought_POSSESSION-CHANGE a house from Sandy
    [target-possessor] [initial-possessor] [possessed]

(232) Sandy sold_POSSESSION-CHANGE Kim the house
    [initial-possessor] [possessed] [target-possessor]

(233) Kim kept_POSSESSION-CONTINUATION the house
    [initial-possessor] [possessed]

(234) Kim lost_POSSESSION-DEINIT the house
    [initial-possessor] [possessed]

(235) Caesar conquered_POSSESSION-INIT Gaul
    [target-possessor] [possessed]

(236) Caesar 's conquest_POSSESSION-INIT of Gaul
    [target-possessor] [possessed]

(237) Kim owes_POSSESSION-CHANGE-NECESSITY Sandy money
    [initial-possessor] [possessed] [target-possessor]
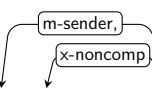
2.33 QUANTITY

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

(238) three burgers$_{\text{CLASS}}$
m-quantity

(239) three liters$_{\text{QUANTITY}}$ of coke
m-quantity *has-quantity*

(240) We discourage$_{\text{MESSAGE}}$ this emphatically
x-sender *m-quantity* *topic*

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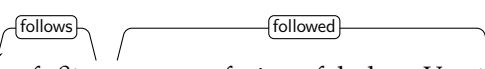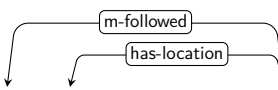
sender originates a message, sent, that can be experienced.

(241) According to Kim it is raining$_{\text{STATE}}$
m-sender, x-noncomp

For more uses, see MESSAGE (Section 2.30).

2.35 SEQUENCE

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

(242) Form follows$_{\text{SEQUENCE}}$ function
follows *followed*

(243) Cook is Jobs 's successor$_{\text{SEQUENCE}}$
follows *followed*

(244) Das fußt$_{\text{SEQUENCE}}$ auf einer falschen Vorstellung
follows *followed*

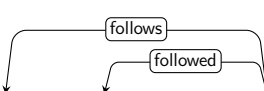(245) Kim deduced$_{\text{SEQUENCE}}$ the truth from the clues
x-experiencer *follows* *followed*

(246) Given that I 'm tired , I wo n't be there$_{\text{LOCATION}}$
m-followed *has-location*

2.36 CAUSATION

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

28

(247) Kim broke_STATE-CHANGE the glass
[x-causer, has-state]

(248) The knife cut_STATE-CHANGE the bread
[x-causer, has-state]

(249) Kim cut_STATE-CHANGE the bread with a knife
[x-causer, has-state, m-means]

(250) The war caused_CAUSATION a famine
[causer, result]

(251) There was_SCENE a famine because of the war
[x-expletive, scene, m-causer]

(252) Der Wasserdruck stieg_QUANTITY-CHANGE , wodurch der Brunnen überfloss
[has-quantity, m-result]

(253) Die Qualität ist der Motivation geschuldet_CAUSATION
[result, causer]

(254) Kim went_LOCATION-CHANGE to town because they wanted to buy food
[has-location, target-location, m-causer]

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

(255) Kim went_LOCATION-CHANGE to town to buy food
[has-location, target-location, m-explanation]
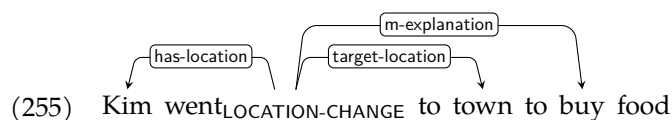
2.37 REACTION

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

(256) Kim reacted_SEQUENCE to the allegations with a denial
[x-causer, followed, follows]
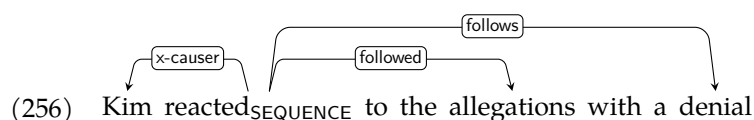
2.38 RESULTATIVE

Special case of CAUSATION where resultative (aka result) assigns an argument of has-resultative (aka causer) a role. We treat the English resultative construc-

tion as a valency-changing operation that adds one or two arguments to the matrix predicate, so we use x-resultative rather than m-resultative.
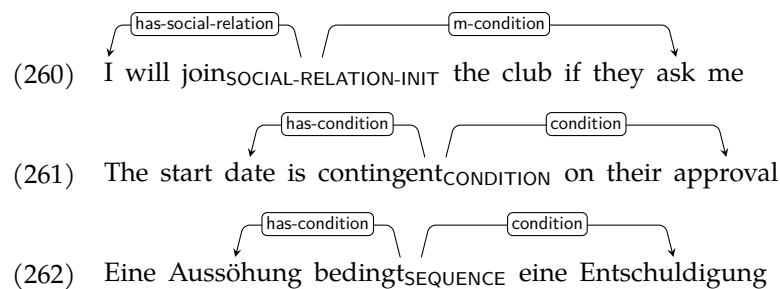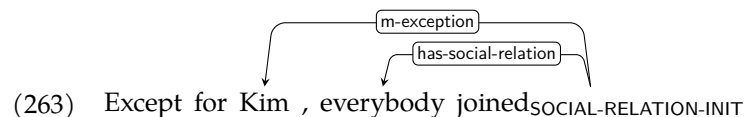
(257) Kim hammered$_{\text{HITTING}}$ the metal flat$_{\text{STATE}}$

x-causer, x-resultative, hit, has-state

(258) Kim sneezed$_{\text{EXPERIENCE}}$ the napkin off the table$_{\text{CLASS}}$

experiencer, x-resultative, x-resultative, x-has-location

(259) Kim painted$_{\text{ADORNMENT-TARNISHMENT}}$ the room red$_{\text{QUALITY}}$

x-causer, x-resultative, surface, has-quality
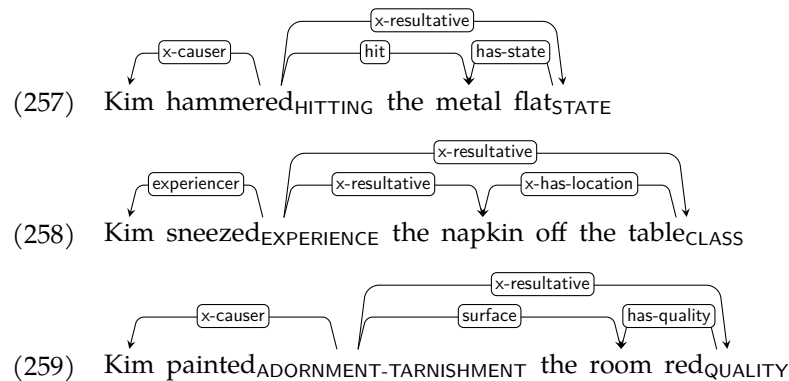
> explain x-has-location

2.39 CONDITION

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

(260) I will join$_{\text{SOCIAL-RELATION-INIT}}$ the club if they ask me

has-social-relation, m-condition

(261) The start date is contingent$_{\text{CONDITION}}$ on their approval

has-condition, condition

(262) Eine Aussöhung bedingt$_{\text{SEQUENCE}}$ eine Entschuldigung

has-condition, condition

2.40 EXCEPTION

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

(263) Except for Kim , everybody joined$_{\text{SOCIAL-RELATION-INIT}}$

m-exception, has-social-relation

2.41 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.
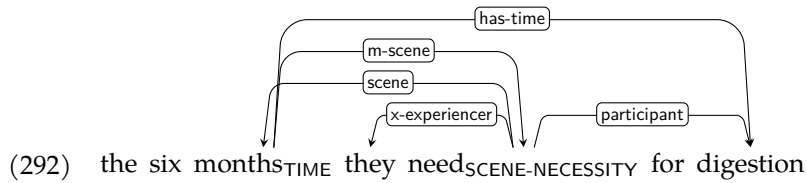
(264) Kim 's friend$_{\text{SOCIAL-RELATION}}$

has-social-relation

30
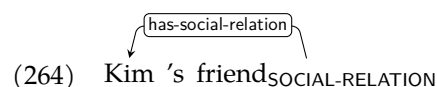
(265) Kim is my cousin_{SOCIAL-RELATION}

- social-relation
- has-social-relation

(266) Kim and Sandy are friends_{SOCIAL-RELATION}

- social-relation

(267) Kim is friends_{SOCIAL-RELATION} with Sandy

- has-social-relation
- social-relation

(268) Kim works_{SOCIAL-RELATION} at Google

- has-social-relation
- social-relation

(269) Kim works_{SOCIAL-RELATION} for Sandy

- has-social-relation
- social-relation

(270) Kim emcees_{SOCIAL-RELATION}

- has-social-relation

(271) Kim is hosting_{SOCIAL-RELATION} the party

- has-social-relation
- social-relation

(272) Kim is under house arrest_{SOCIAL-RELATION}

- has-social-relation

(273) Kim sentence_{SOCIAL-RELATION} was suspended

- has-social-relation

(274) Kim married_{SOCIAL-RELATION-INIT} Sandy

- has-social-relation
- target-social-relation

(275) The official married_{SOCIAL-RELATION-INIT} Kim to Sandy

- x-causer
- target-social-relation
- has-social-relation

(276) The official married_{SOCIAL-RELATION-INIT} Kim and Sandy

- x-causer
- has-social-relation

(277) Kim divorced_{SOCIAL-RELATION-INIT} Sandy

- has-social-relation
- initial-social-relation

(278) Kim befriended_{SOCIAL-RELATION} Sandy

- has-social-relation
- target-social-relation

(279) Kim took_{SOCIAL-RELATION-INIT} the job

- has-social-relation
- target-social-relation

(280) Kim joined~SOCIAL-RELATION-INIT~ Google
has-social-relation, *target-social-relation*

(281) Kim joined~SOCIAL-RELATION-INIT~ a union
has-social-relation, *target-social-relation*

(282) Sandy fired~SOCIAL-RELATION-DEINIT~ Kim from their job
x-causer, *has-social-relation*, *initial-social-relation*

(283) Kim left~SOCIAL-RELATION-DEINIT~ Google
has-social-relation, *initial-social-relation*

(284) Kim assumed~SOCIAL-RELATION-INIT~ office
has-social-relation, *target-social-relation*

(285) The judge sentenced~SOCIAL-RELATION-INIT~ Kim to three days in prison
x-causer, *has-social-relation*, *target-social-relation*

(286) Kim was pardoned~SOCIAL-RELATION-DEINIT~
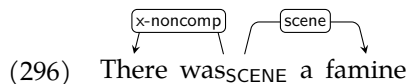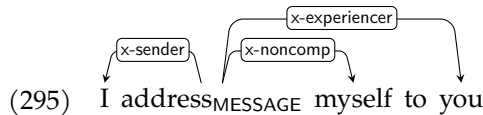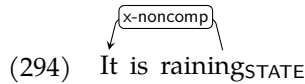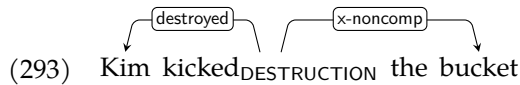*has-social-relation*

2.42 TIME

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

(287) Kim swims~UNANCHORED-MOTION~ on Monday
has-location, *m-time*

(288) Kim sneezed~EXPERIENCE~ twice
experiencer, *m-time*

(289) Kim swam~UNANCHORED-MOTION~ for an hour
has-location, *m-time*

(290) Kim says~MESSAGE~ hello whenever I meet them
x-sender, *content*, *m-time*

(291) Once~TIME~ when I was six years old

(292) the six months_TIME they need_SCENE-NECESSITY for digestion

2.43 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*.

(293) Kim kicked_DESTRUCTION the bucket

(294) It is raining_STATE

(295) I address_MESSAGE myself to you

(296) There was_SCENE 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.

(297) Kim drove_LOCATION-CHANGE to Boston

(298) Kim drove_LOCATION-CHANGE the car to Boston
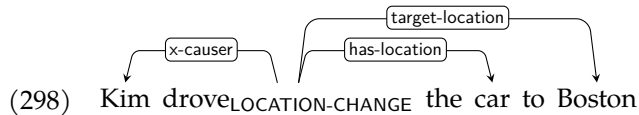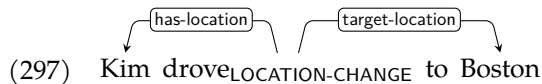
3.2 Arguments Determine Frames

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 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.

33

(299)   my first drawing_{MESSAGE}

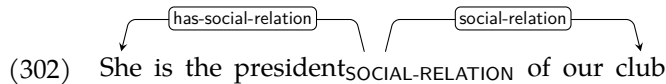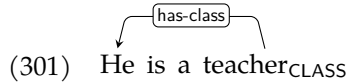with dependency arcs labeled *m-sender* and *m-order*
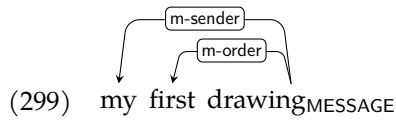
3.3   Participant Nouns

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:
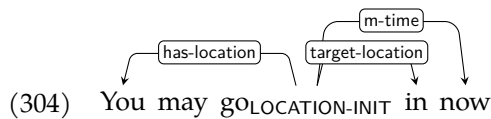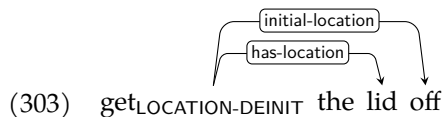
(300)   With that, my critic_{MESSAGE} sat down again

with dependency arc labeled *topic*

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

(301)   He is a teacher_{CLASS}

with dependency arc labeled *has-class*

(302)   She is the president_{SOCIAL-RELATION} of our club

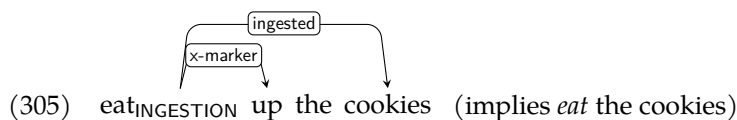with dependency arcs labeled *has-social-relation* and *social-relation*

3.4   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.

(303)   get_{LOCATION-DEINIT} the lid off

with dependency arcs labeled *initial-location* and *has-location*

(304)   You may go_{LOCATION-INIT} in now

with dependency arcs labeled *has-location*, *target-location*, and *m-time*

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.

(305)   eat_{INGESTION} up the cookies   (implies *eat* the cookies)

with dependency arcs labeled *ingested* and *x-marker*

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

(306) do_EXPERIENCE somebody in   (does not imply *do* somebody)
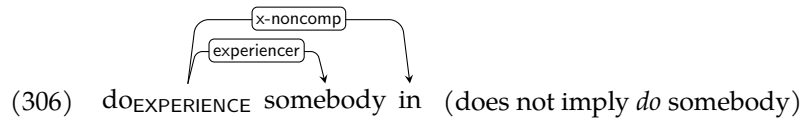
refer to PARSEME guidelines

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Di Fabio, A., Conia, S., and Navigli, R. (2019). VerbAtlas: a novel large-scale verbal semantic resource and its application to semantic role labeling. In Inui, K., Jiang, J., Ng, V., and Wan, X., editors, *Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing and the 9th International Joint Conference on Natural Language Processing* (*EMNLP-IJCNLP*), pages 627–637, Hong Kong, China. Association for Computational Linguistics.

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Palmer, M., Gildea, D., and Kingsbury, P. (2005). The Proposition Bank: An annotated corpus of semantic roles. *Computational Linguistics*, 31(1):71–106.