Superframes Manual

Kilian Evang

Last updated: June 26, 2024

Contents

SUPERFRAME	initial-arg2	arg1	arg2	transitory-arg2	target-arg2	Sec.
🟥 EVENTUALITY						2.1
└ 🏷 PREDICATION		argument	predicate			2.2
└ 🏃 ACTIVITY		is-active	activity			2.3
└ 🍏 CLASS	initial-class	has-class	class		target-class	2.4
└ ✨ EXISTENCE			exists			2.5
└ 📝 REPRODUCTION		original			copy	2.6
└ 🖋 TRANSFORMATION-CREATION		material			created	2.7
└ 👁 EXPERIENCE	initial-experienced	experiencer	experienced	transitory-experienced	target-experienced	2.8
└ 🆔 IDENTIFICATION		identified	identifier			2.9
└ ❓ MODE		has-mode	mode			2.10
└ 🍎 QUALITY		has-quality	quality			2.11
└ 📊 QUANTITY		has-quantity	quantity			2.12
└ 🏆 RANK		has-rank	rank			2.13
└ 💤 STATE	initial-state	has-state	state		target-state	2.14
└ 💀 DESTRUCTION		destroyed				2.15
└ 🔗 RELATION		satellite	nucleus			2.16
└ ‖ ACCOMPANIMENT		accompanied	accompanier			2.17
└ ✏ DEPICTIVE		has-depictive	depictive			2.18
└ 💰 ASSET		has-asset	asset			2.19
└ ✚ ATTRIBUTE		has-attribute	attribute			2.20
└ ⚖ COMPARISON		compared	reference			2.21
└ 🔑 CONCESSION		assertion	conceded			2.22
└ ❗ EXPLANATION		explained	explanation			2.23
└ 🎯 PURPOSE		has-purpoe	purpose			2.24
└ 📍 LOCATION	initial-location	has-location	location	transitory-location	target-location	2.25
└ 💎 ADORNMENT-TARNISHMENT	initial-surface	ornament	surface		target-surface	2.26
└ 💦 EXCRETION	excreter	excreted		transitory-location	target-location	2.27
└ 🏏 HITTING		hitting	hit			2.28
└ 🍴 INGESTION		ingested		transitory-location	ingester	2.29
└ 🏃 UNANCHORED-MOTION		in-motion		transitory-location		2.30
└ 🎁 WRAPPING-WEARING		worn	wearer			2.31
└ ⛏ MEANS		has-means	means			2.32
└ 💬 MESSAGE		topic	content			2.33
└ 🕸 NONCOMP		has-noncomp	noncomp			2.34
└ 🧩 PART-WHOLE	initial-whole	part	whole		target-whole	2.35
└ 🐎 POSSESSION	initial-possessor	possessed	possessor		target-possessor	2.36
└ 🎭 SCENE	initial-scene	participant	scene	transitory-scene	target-scene	2.37
└ ✉ SENDING		sent	sender			2.38
└ 🎞 SEQUENCE		follows	followed			2.39
└ 💥 CAUSATION		result	causer			2.40
└ 🗝 CONDITION		has-condition	condition			2.41
└ 🚫 EXCEPTION		has-exception	exception			2.42
└ 💥 REACTION		reaction	trigger			2.43
└ 😖 RESULTATIVE		has-resultative	resultative			2.44
└ 👍 SOCIAL-RELATION	initial-social-relation	has-social-relation	social-relation		target-social-relation	2.45
└ ⏰ TIME		has-time	time			2.46

Table 1: Hierarchy of Superframes and their Roles

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.

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, sorted into a rough hierarchy. At the top is EVENTUALITY, with the two subtypes PREDICATION and RELATION. All the main superframes are direct children of PREDICATION or RELATION. Some of them have one or more subtypes intended to make the annotation of certain special cases more intuitive and unambiguous.

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$_{\text{STATE}}$
[has-state]

(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] [possessed]

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

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

6

1.2 Aspect, Mode, and Polarity

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) means it fails to come about. 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_{POSSESSION-INIT} the house
    [target-possessor] [possessed]

(7) Kim lost_{POSSESSION-DEINIT} the house
    [initial-possessor] [possessed]

(8) Kim sold_{POSSESSION-CHANGE} the house to Sandy
    [initial-possessor] [possessed] [target-possessor]

(9) Kim kept_{POSSESSION-CONTINUATION} the house
    [initial-possessor] [possessed]

(10) Kim went_{LOCATION-CHANGE} from Chicago via Pittsburgh to Boston
    [has-location] [initial-location] [transitory-location] [target-location]

(11) The vase fell_{LOCATION-CHANGE} to the ground
    [has-location] [target-location]

(12) The vase broke_{STATE-CHANGE}
    [has-state]

(13) Kim befriended_{SOCIAL-RELATION-INIT} Sandy
    [has-social-relation] [target-social-relation]

(14) Kim married_{SOCIAL-RELATION-INIT} Sandy
    [has-social-relation] [target-social-relation]

(15) Kim divorced_{SOCIAL-RELATION-DEINIT} Sandy
    [has-social-relation] [initial-social-relation]

(16) Kim saved_{EXPERIENCE-PREVENTION} Sandy from the dragon
    [x-causer] [experiencer] [target-experienced]

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

(17) The concert began_{SCENE-INIT} [target-scene]

(18) The concert continued_{SCENE-CONTINUATION} [initial-scene]

(19) The concert finished_{SCENE-DEINIT} [initial-scene]

(20) The shouting intensified_{SCENE-CONTINUATION} [initial-scene]

(21) The shouting faded_{SCENE-DEINIT} [initial-scene]

(22) A coup was attempted_{SCENE-INIT} [target-scene]

(23) Kim finished_{SCENE-DEINIT} their work [participant] [initial-scene]

(24) Swift action prevented_{SCENE-PREVENTION} an outbreak [x-causer] [target-scene]

(25) Kim refrained_{SCENE-PREVENTION} from going [participant] [target-scene]

(26) Kim prevented_{SCENE-PREVENTION} Sandy from going [x-causer] [target-scene] [participant]

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

(27) Change is necessary_{SCENE-NECESSITY} [scene]

(28) Change is possible_{SCENE-POSSIBILITY} [scene]

(29) Kim owes_{POSSESSION-CHANGE-NECESSITY} Sandy money [initial-possessor] [target-possessor] [possessed]

Finally, we can use the polarity suffix -NEG. It can combine with aspectual and modal suffixes.

(30)   absence$_\text{EXISTENCE-NEG}$ of evidence

(31)   That is impossible$_\text{SCENE-POSSIBILITY-NEG}$

(32)   They never$_\text{TIME-NEG}$ understand

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 (33) 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.

(33) Kim threw$_{\text{LOCATION-CHANGE}}$ the vase to the ground
       x-causer   has-location   target-location

(34) Kim broke$_{\text{STATE-CHANGE}}$ the vase
       x-causer   has-state
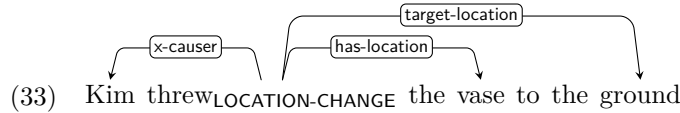
Two other common non-core arguments are the senders and recipients (experiencers) of messages.

(35) Kim talked$_{\text{MESSAGE-INIT}}$ to Sandy about Bali
       x-sender   x-experiencer   topic

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

(36) Kim searched$_{\text{MESSAGE-INIT}}$ the woods for Sandy
       x-experiencer   x-location   topic

(37) Kim sold$_{\text{POSSESSION-CHANGE}}$ Sandy the house for a million dollars
       initial-possessor   target-possessor   possessed   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-.

(38)   Kim is sweating_{EXCRETION} profusely in the sauna

[Diagram: excreter points from sweating to Kim; m-quantity points from sweating to profusely; m-location points from sweating to sauna]
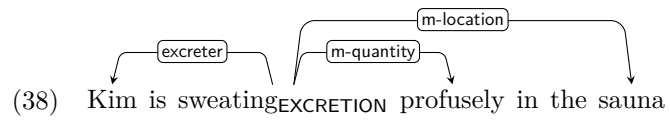
1.5 Nonverbal Predicates

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:

(39) a tree$_{\text{CLASS}}$ in the garden [m-location]

(40) Kim 's tree$_{\text{CLASS}}$ [m-possessor]

Event nouns evoke event frames and have arguments:

(41) Kim 's breaking$_{\text{STATE-CHANGE}}$ of the vase [x-causer] [has-state]

Relational nouns evoke relational frames and have arguments:

(42) Kim 's friend$_{\text{SOCIAL-RELATION}}$ [has-social-relation]

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

(43) Kim$_{\text{IDENTIFICATION}}$

(44) they$_{\text{IDENTIFICATION}}$

Predicate adjectives most typically denote states or qualities.

(45) I am despicable$_{\text{QUALITY}}$ [has-quality]

(46) the dog is tired$_{\text{STATE}}$ [has-state]

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

(47) despicable me$_{\text{IDENTIFICATION}}$ [m-quality]
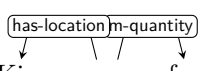
(48) the tired dog$_{\text{CLASS}}$ [m-state]

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

(49) Kim ran$_{\text{Motion}}$ fast

$\boxed{\text{has-location}}\boxed{\text{m-quality}}$

(50) Kim ran$_{\text{Motion}}$ far

$\boxed{\text{has-location}}\boxed{\text{m-quantity}}$

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.

(51) Kim promised Sandy to come_{LOCATION-CHANGE}   (subject control)

has-location

(52) Kim used a hammer to smash_{STATE-CHANGE} the vase   (subject control)

x-causer   has-state

(53) Kim persuaded Sandy to come_{LOCATION-CHANGE}   (object control)

has-location

(54) Kim seemed to fly_{UNANCHORED-MOTION}   (raising)

has-location

(55) Kim entered the room singing_{MESSAGE-INIT}   (depictive)

x-sender

(56) You're talking me silly_{STATE}   (resultative)

has-state

(57) Kim has come to stay_{LOCATION-CONTINUATION}   (subjectless adverbial clause)

has-location

(58) Kim left after trashing_{STATE-CHANGE} the room   (subjectless adverbial clause)

x-causer   has-state

(59) Kim is hard to love_{MESSAGE}   (*tough* construction)

topic

(60) the song I like_{MESSAGE}   (relative clause)

topic   x-experiencer

(61) the question we raised without answering_{MESSAGE-INIT}   (parasitic gap)

topic   x-sender

14

1.7 Figurativity, Idiomaticity, and Uncertainty

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.

(62) A hush passed_{UNANCHORED-MOTION » SCENE} over the group
[in-motion » scene]   [transitory-location » participant]

(63) Kim refused_{MESSAGE-INIT » SCENE} to eat
[x-sender » participant]   [topic » scene]

This mechanism can be used to indicate that an expression has become fixed and not fully compositional:

(64) primeval forest_{CLASS}
[m-time » m-noncomp]

(65) colored pencil_{CLASS}
[m-quality » m-noncomp]

(66) to lay_{LOCATION-CHANGE » MESSAGE-DEINIT} aside my drawings
[has-location » topic]
[target-location » x-noncomp]

If you cannot choose between two frames for another reason, use || instead of >>.

2 Superframes Reference

2.1 🟥 EVENTUALITY

This is the most generic superframe. Use it only for sentential predicates with no discernible arguments, such as interjections.

(67) Yes_{EVENTUALITY}

(68) No_{EVENTUALITY-NEG}

(69) What_{IDENTIFICATION » EVENTUALITY} ?

2.2 🏷️ PREDICATION

The predicate is true of the argument. Normally, there should be no reason to use this superframe; instead, use one of the more specific subtypes. Directly use this superframe only when none of the more specific subtypes seems to fit (currently, there are no known cases of this, so there are no examples). For PREDICATION and all of its subtypes, arg2 is typically a shadow argument, that is, it is incorporated into the predicate and not realized as a syntactic argument. This makes sense, because the predicate is already the predicate. However, there are cases where a semantic predicate is jointly realized by the syntactic predicate and its arg2. An example is shown in (70).

(70)   They number$_\text{QUANTITY}$ in the thousands
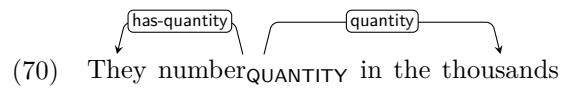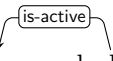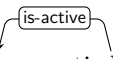
2.3 🦎 ACTIVITY

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.
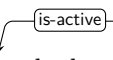
(71) Kim worked_{ACTIVITY}

(72) Kim partied_{ACTIVITY}
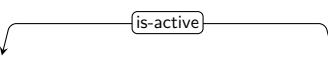
(73) Kim had sex_{ACTIVITY}

(74) after some work_{ACTIVITY} with a colored pencil

(75) I devoted myself to geography_{ACTIVITY}

2.4 🌳 CLASS
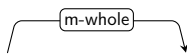
class indicates the class of entity that has-class represents.
   Most prototypically evoked by common nouns with no arguments.

(76)   swallowing an animal_{CLASS}

Indefinite pronouns also evoke CLASS.

(77)   She saw one_{CLASS}

(78)   Nothing_{CLASS} about him suggested a child

(79)   Why would anyone_{CLASS} be frightened by a hat?

(80)   Something_{CLASS} is broken

(81)   Where I live everything_{CLASS} is small

2.5 ✨ EXISTENCE

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

(82)   I exist$_{\text{EXISTENCE}}$

(83)   There is$_{\text{EXISTENCE}}$ a hill

(84)   There is$_{\text{SCENE}}$ a hubbub

2.6 📝 REPRODUCTION

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

(85)   Here is a copy_{REPRODUCTION} of the drawing

(86)   This is a translation_{REPRODUCTION} of the pamphlet into English
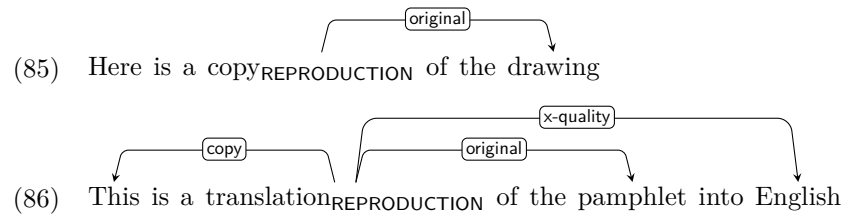
2.7 🪄 TRANSFORMATION-CREATION

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

(87) I succeeded in making$_{\text{TRANSFORMATION-CREATION}}$ my first drawing

[diagram: x-causer links "I" to "making"; created links "making" to "drawing"]

(88) Kim built$_{\text{TRANSFORMATION-CREATION}}$ a castle out of sand

[diagram: x-causer links "Kim" to "built"; created links "built" to "castle"; material links "built" to "sand"]

(89) Kim turned$_{\text{TRANSFORMATION-CREATION}}$ straw into gold

[diagram: x-causer links "Kim" to "turned"; created links "turned" to "gold"; material links "turned" to "straw"]

2.8 👁 EXPERIENCE

experiencer experiences experienced.

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

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

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

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

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

(94) Kim talked_MESSAGE-INIT to Sandy
    [x-sender] [x-experiencer]

(95) Kim did_SCENE something nice for Sandy
    [participant] [scene] [m-experiencer]

(96) Kim cooked a meal only to have_SCENE Sandy spurn it
    [x-experiencer] [scene] [participant]

(97) Kim managed_EXPERIENCE with dealing the cards
    [experiencer] [experienced]

(98) Die Piroggen waren Maria zu dunkel geraten_SCENE-INIT
    [participant] [x-experiencer] [target-scene]

(99) Das hat mir gerade noch gefehlt_EXPERIENCE
    [experienced] [x-noncomp] [experiencer] [x-noncomp] [x-noncomp]

(100) they need~EXPERIENCE-NECESSITY~ six months for digestion

Arc labels above the example: experiencer, experienced, x-purpose
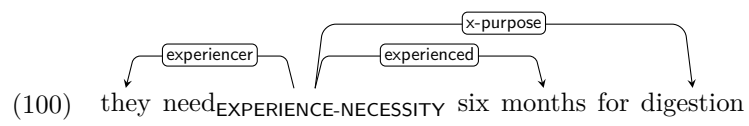
For more uses, see the examples for MESSAGE in Section 2.33.

2.9 🖼 IDENTIFICATION

identifier identifies identified.

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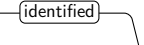
(101) I_{IDENTIFICATION} saw a picture

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

(103) a book called_{IDENTIFICATION} True Stories from Nature
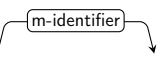
(104) This is Kim_{IDENTIFICATION}

In English, the preposition *of* has an identifying sense, which can also be metaphorical:

(105) the island_{CLASS} of Pultanella

(106) the stallion_{CLASS} of Rumour

Likewise, *in* has an identifying sense:

(107) In answer , he repeated_{MESSAGE-INIT} : Please, draw me a sheep !

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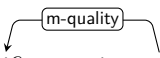
Used for adverbial modifiers that have no arguments other than the phrase they modify, and that, rouhgly speaking, indicate the modal strength of what is expressed and/or its relation to the discourse.

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

     [m-mode]

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

     [x-causer] [m-mode] [initial-surface]

(110)   Passt_{COMPARISON} das eh ?

     [m-mode] [compared]

(111)   Kim probably knows_{MESSAGE} that

     [x-experiencer] [m-mode] [content]

(112)   That 's really great_{QUALITY}

     [has-quality] [m-mode]

(113)   Kim is not here_{LOCATION}

     [has-location] [m-mode]
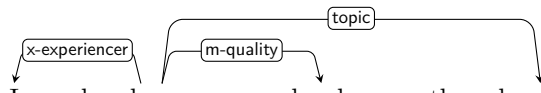
2.11 🍎 QUALITY

quality indicates a (permanent) quality/property/manner of has-quality.
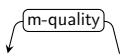
(114) a magnificent picture$_{\mathsf{MESSAGE}}$
      [m-quality]
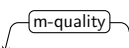
(115) I pondered$_{\mathsf{MESSAGE\text{-}INIT}}$ deeply over the adventures of the jungle
      [x-experiencer] [m-quality] [topic]

(116) a skilled surgeon$_{\mathsf{CLASS}}$
      [m-quality]
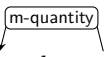
(117) such knowledge$_{\mathsf{MESSAGE}}$ is valuable
      [m-quality]
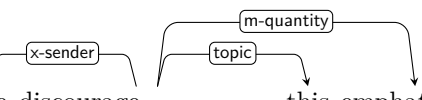
2.12 📊 QUANTITY

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

(118)   three burgers_{CLASS}

(119)   three liters_{QUANTITY} of coke

(120)   We discourage_{MESSAGE-INIT} this emphatically

2.13 🥉 RANK
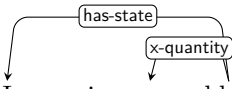
rank indicates the order that has-rank has in some sequence.

(121)   Chapter~MESSAGE~ 1

(122)   my first drawing~MESSAGE~
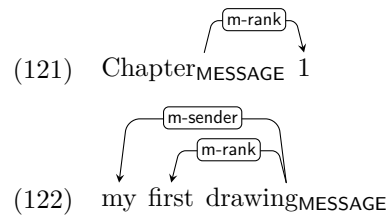
2.14 💤 STATE

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

(123) when I was six years old$_{\text{STATE}}$
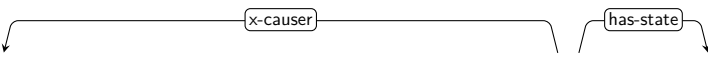
(124) Boa constrictors swallow their prey whole$_{\text{STATE}}$
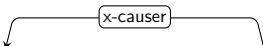
(125) they sleep$_{\text{STATE}}$

(126) they swallow their prey whole without chewing$_{\text{STATE-CHANGE}}$ it

(127) the six months that they need for digestion$_{\text{STATE-CHANGE}}$
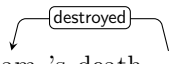
(128) And that hasn't much improved$_{\text{STATE-CHANGE}}$ my opinion of them

2.15 💀 DESTRUCTION

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

(129)   Sam 's death$_{\text{DESTRUCTION}}$

(130)   Sam 's destruction$_{\text{DESTRUCTION}}$ of the city

When something is broken but not completely destroyed, use STATE.

(131)   Something was broken$_{\text{STATE}}$ in my enginge
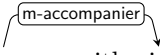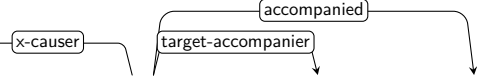
2.16 🔗 RELATION

There is a relation between satellite and nucleus, where the latter is more central, and the former more peripheral, if any such hierarchy can be established. Normally, there should be no reason to use this superframe; instead, use one of the more specific subtypes. Directly use this superframe only when none of the more specific subtypes seems to fit (currently, there are no known cases of this, so there are no examples).
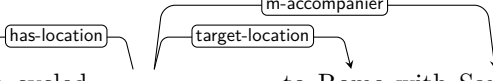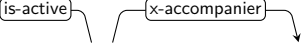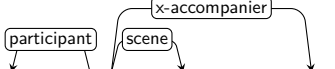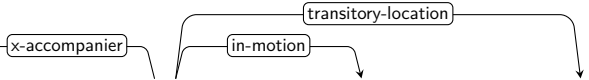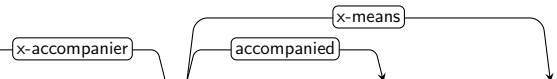
2.17 🍴 ACCOMPANIMENT

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

(132)   veggies$_{\text{CLASS}}$ with rice
     [m-accompanier]

(133)   The veggies come$_{\text{ACCOMPANIMENT}}$ with rice
     [accompanied] [accompanier]

(134)   Kim added$_{\text{ACCOMPANIMENT-INIT}}$ rice to the veggies
     [x-causer] [target-accompanier] [accompanied]

(135)   Rolling thunder accompanies$_{\text{ACCOMPANIMENT}}$ the rain
     [accompanier] [accompanied]

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

(136)   Kim cycled$_{\text{LOCATION-CHANGE}}$ to Rome with Sandy
     [has-location] [target-location] [m-accompanier]

(137)   Kim danced$_{\text{ACTIVITY}}$ with Sandy
     [is-active] [x-accompanier]

(138)   Kim had$_{\text{SCENE}}$ sex with Sandy
     [participant] [scene] [x-accompanier]

(139)   Kim chased$_{\text{UNANCHORED-MOTION}}$ Sandy around the block
     [x-accompanier] [in-motion] [transitory-location]

(140)   Kim accompanied$_{\text{ACCOMPANIMENT}}$ Sandy
     [x-accompanier] [accompanied]

(141)   Kim accompanied$_{\text{ACCOMPANIMENT}}$ Sandy on the piano
     [x-accompanier] [accompanied] [x-means]

2.18 🖌 DEPICTIVE

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

(142) Kim entered_{LOCATION-INIT} the room singing_{MESSAGE-INIT}

with arc labels: x-sender, m-depictive, has-location, target-location
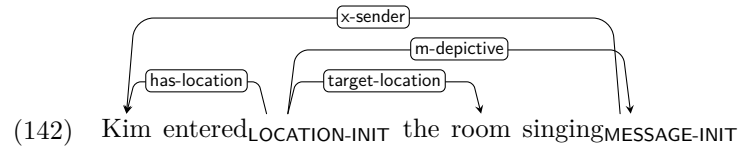
2.19 💰 ASSET

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

(143) Kim bought_{POSSESSION-CHANGE} the house for a million dollars

(144) Kim offered_{MESSAGE-INIT} Sandy a million dollars for the house

(145) I bet_{MESSAGE-INIT} you 30 bucks to an apple he will win
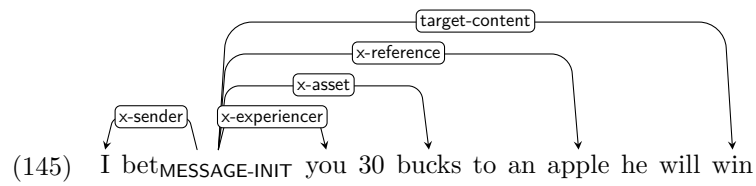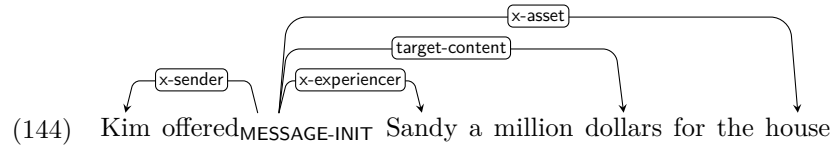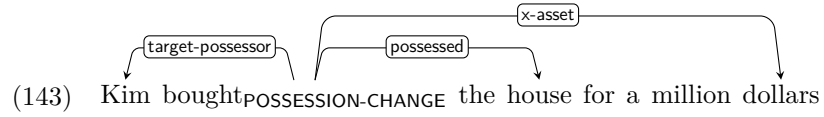
2.20 ✳ ATTRIBUTE

In a scene has-attribute, attribute is the part or attribute of one or more participants that is most directly involved in the scene. Add a dependency link between the participant and its attribute to indicate wich participant(s) have the attribute.

(146) Kim exceeds_{COMPARISON} Sandy in height_{QUALITY}

(147) That is great_{QUALITY} in terms of ROI_{QUALITY}

(148) Kim ist auf den Kopf_{CLASS} gefallen_{HITTING}

(149) Kim hit_{HITTING} Sandy on the head_{CLASS} with a stick

36
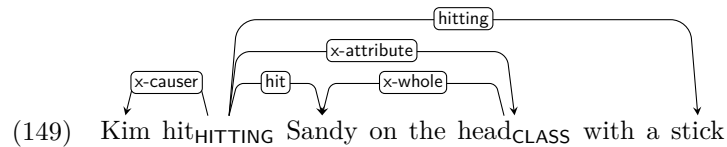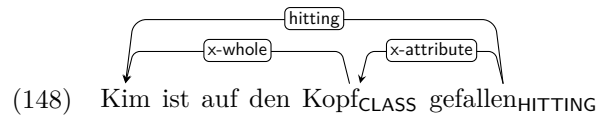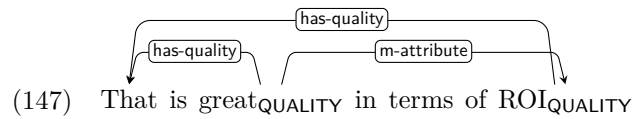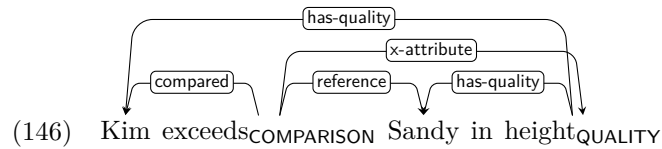
2.21 ⚖ COMPARISON

compared is characterized with respect to reference.

Examples of comparing scenes:

(150) Compared to Sandy, Kim is tall_{QUALITY}
(annotation: m-reference, has-quality)

(151) Sandy is short_{QUALITY} whereas Kim is tall
(annotation: has-quality, m-comparison)

(152) They demonize_{MESSAGE-INIT} the left while doing nothing about the right
(annotation: x-sender, m-reference, topic)
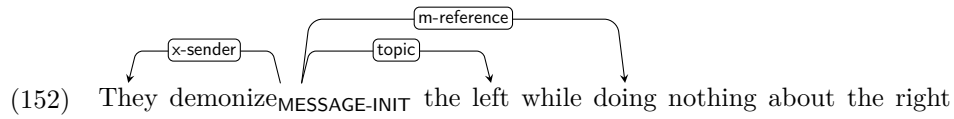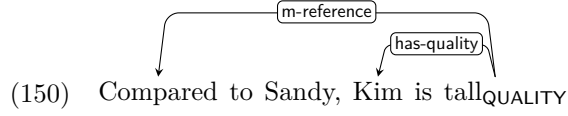
Examples of comparing non-scene entities:

(153) Kim outranks_{COMPARISON} Sandy
(annotation: compared, reference)

(154) Kim exceeds_{COMPARISON} Sandy in height
(annotation: compared, x-attribute, reference)

(155) The Polish restaurant compared_{COMPARISON} favorably to the Spanish one
(annotation: compared, x-quality, reference)

(156) Kim compared_{COMPARISON} Coke to Pepsi
(annotation: x-experiencer, reference, compared)

The reference need not be an entity similar to the compared, it can also be an abstract constraint:

(157) The program conforms_{COMPARISON} to the spec
(annotation: compared, reference)

(158) Kim ran_{COMPARISON-DEINIT} afoul of Fielding 's constraints
(annotation: compared, reference, m-noncomp)
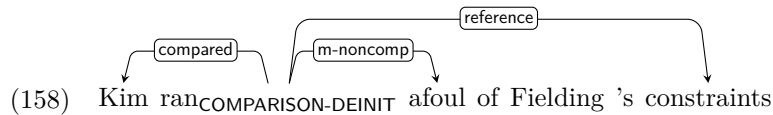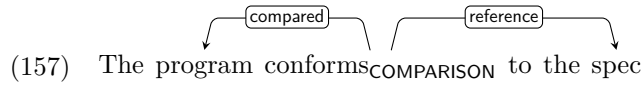
We analyze gradation of adjectives as a valency-changing derivation that adds an x-reference argument.

(159) more isolated_{SOCIAL-RELATION} than a shipwrecked sailor
(annotation: m-quantity, x-reference)

(160)   Kim is taller$_\textsf{QUALITY}$ than Sandy

has-quality

x-reference

2.22 👌 CONCESSION

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

(161) Kim went$_{\text{LOCATION-CHANGE}}$ out despite the rain

has-location · target-location · m-conceded

(162) It rained$_{\text{STATE}}$, but Kim went out

x-noncomp · m-asserted

(163) Kim sent$_{\text{SENDING}}$ Sandy a letter , but it never arrived

sender · x-experiencer · sent · m-asserted

(164) Kim came$_{\text{LOCATION-INIT}}$ although Sandy had told them not to

has-location · m-conceded

39
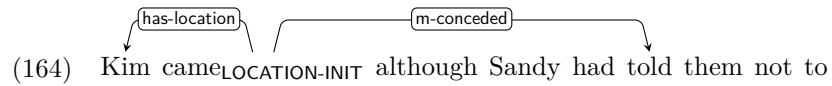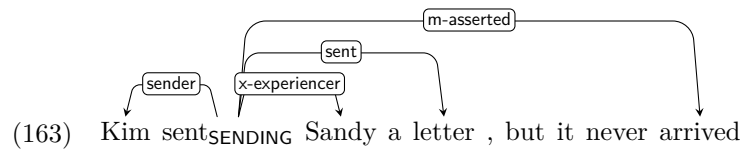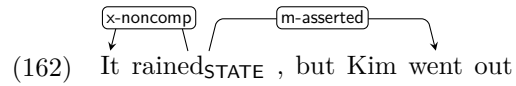
2.23 ❗ EXPLANATION

explanation explains explained, but is not a cause.

(165)   I am stressing$_{\text{MESSAGE-INIT}}$ this because it is important

x-sender · topic · m-explanation
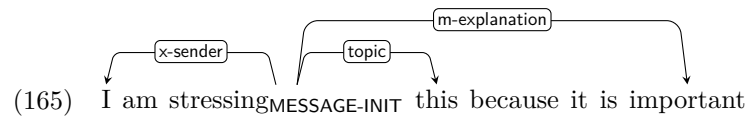
2.24 🎯 PURPOSE

Special case of EXPLANATION where explanation is a purpose.

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

target-possessor
m-explanation
has-location
target-location
possessed

(167) drinking$_{\text{INGESTION}}$ water$_{\text{CLASS}}$

ingested
m-purpose
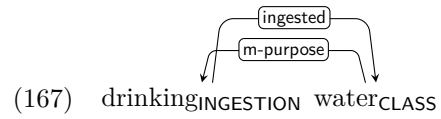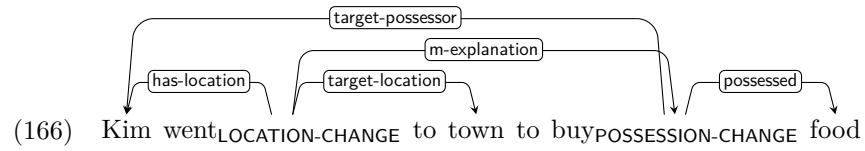
2.25 📍 LOCATION

Describes has-location as located or moving wrt. respect to location.
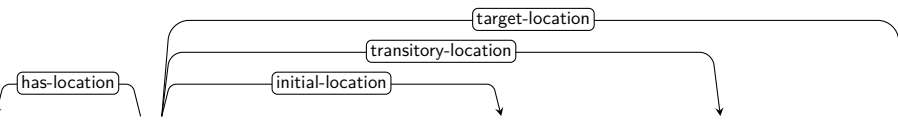
(168) the hat_{CLASS} in the box
             [m-location]
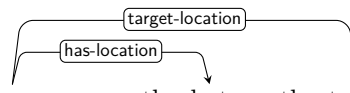
(169) Kim lives_{LOCATION} in Boston
     [has-location]   [location]

(170) Kim went_{LOCATION-CHANGE} from the living room through the door into the kitchen
     [has-location] [initial-location] [transitory-location] [target-location]

(171) Kim placed_{LOCATION-CHANGE} the hat on the table
     [x-causer] [has-location] [target-location]

42

2.26 💎 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
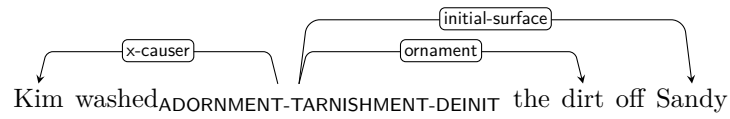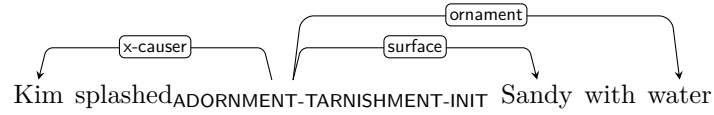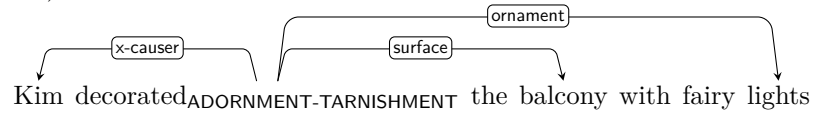
2.27 💦 EXCRETION

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

(172)   Kim threw$_{\text{EXCRETION}}$ up the pretzel
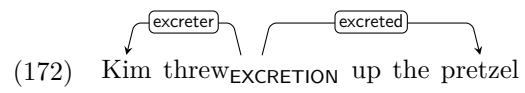
2.28 🏏 HITTING

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

(173) Kim hit$_{\text{HITTING}}$ Sandy
      [x-causer] [hit]

(174) Kim hit$_{\text{HITTING}}$ Sandy with a stick
      [x-causer] [hit] [hitting]

(175) The stick hit$_{\text{HITTING}}$ Sandy
      [hitting] [hit]

(176) Kim hit$_{\text{HITTING}}$ Sandy on the head$_{\text{CLASS}}$ with a pool noodle
      [x-causer] [hit] [x-attribute] [x-whole] [hitting]

(177) Kim kicked$_{\text{HITTING}}$ Sandy
      [x-causer] [hit]
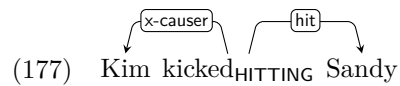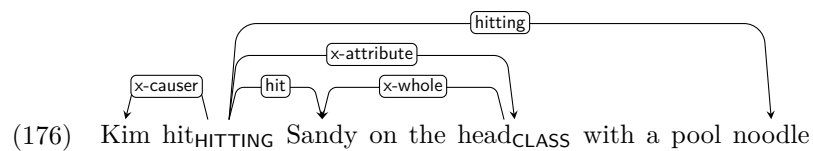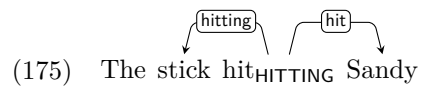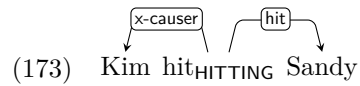
2.29 🥣 INGESTION

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

(178)   Kim ate$_{\text{INGESTION}}$ an apple

(179)   Kim nibbled$_{\text{INGESTION}}$ on the pretzel

2.30 🌱 UNANCHORED-MOTION

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

(180) Kim is running_{UNANCHORED-MOTION} along the river
      [in-motion]   [transitory-location]
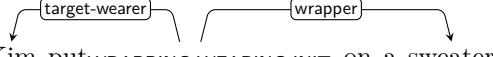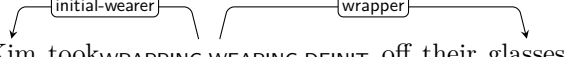
(181) I learned to pilot_{UNANCHORED-MOTION} airplanes
      [x-causer]   [in-motion]

(182) Kim is dancing_{UNANCHORED-MOTION} around the room with Sandy
      [in-motion]   [transitory-location]   [m-accompanier]

(183) Kim is an avid unicyclist_{UNANCHORED-MOTION}
      [in-motion]   [m-quality]

2.31 👕 WRAPPING-WEARING

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

(184) Kim is wearing_{WRAPPING-WEARING} a shirt

(185) Kim is wearing_{WRAPPING-WEARING} glasses

(186) The shroud wraps_{WRAPPING-WEARING} the scepter

(187) Kim put_{WRAPPING-WEARING-INIT} on a sweater

(188) Kim took_{WRAPPING-WEARING-DEINIT} off their glasses

48

2.32 🔨 MEANS

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

(189) Kim cut_{STATE-CHANGE} the cake with a knife

(190) Kim painted_{ADORNMENT-TARNISHMENT} the room by exploding a paint bomb

(191) Kim used_{MEANS} a pen to get_{LOCATION-DEINIT} the lid off

(192) You used_{MEANS} me !
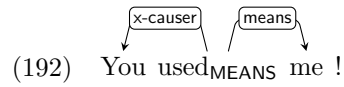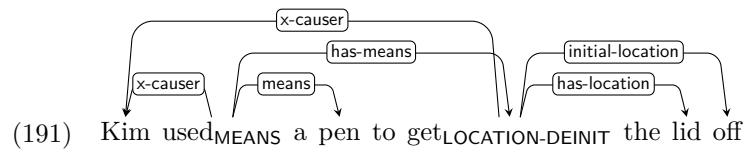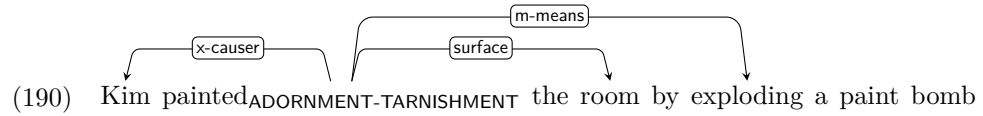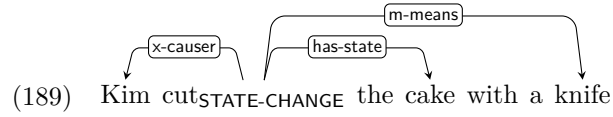
2.33 ◯ MESSAGE

A message about topic with content content exists in perceived, measured, or recorded recorded form. When a message is created through expression or observation, use MESSAGE-INIT. When content and topic are both realized, content must assign a role to topic.

Predicates of expression use MESSAGE-INIT:

(193) Kim yelped$_{\text{MESSAGE-INIT}}$ [x-sender]

(194) Kim said$_{\text{MESSAGE-INIT}}$: it 's fine [x-sender] [target-content]

(195) Kim said$_{\text{MESSAGE-INIT}}$ it was fine [x-sender] [target-content]

(196) Kim called$_{\text{MESSAGE-INIT}}$ Sandy a liar$_{\text{MESSAGE}}$ [x-sender] [target-content] [topic] [x-sender]

(197) Kim told$_{\text{MESSAGE-INIT}}$ Sandy a secret [x-sender] [target-content] [x-experiencer]

(198) Kim talked$_{\text{MESSAGE-INIT}}$ about Sandy [x-sender] [topic]

(199) Kim talked$_{\text{MESSAGE-INIT}}$ shit$_{\text{MESSAGE}}$ about Sandy [x-sender] [target-content] [topic] [topic]

(200) Kim and Sandy conversed$_{\text{MESSAGE-INIT}}$ [x-sender] [x-sender]

(201) Kim conversed$_{\text{MESSAGE-INIT}}$ with Sandy [x-sender] [x-accompanier]

Gesture is a kind of expression, too:

(202) Kim curtseyed$_{\text{MESSAGE-INIT}}$ to the Queen [x-sender] [x-experiencer]

(203) Kim shook$_{\text{UNANCHORED-MOTION » MESSAGE-INIT}}$ their head no [x-causer » x-sender] [x-sent » target-content] [in-motion » x-noncomp]

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

the topic:

(204)　Kim played$_{\text{MESSAGE-INIT}}$ a little tune on their tuba

Arcs labeled: x-sender, topic, x-means

(205)　They performed$_{\text{MESSAGE-INIT}}$ the play

Arcs labeled: x-sender, topic

(206)　Kim sang$_{\text{MESSAGE-INIT}}$ a song

Arcs labeled: x-sender, topic
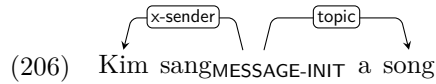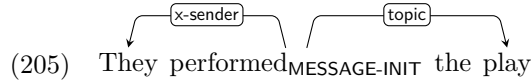
What is depicted gets the topic role:

(207)　Kim drew$_{\text{MESSAGE-INIT}}$ a heron

Arcs labeled: x-sender, topic

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

Arc labeled: topic

(209)　The concert was recorded$_{\text{MESSAGE-INIT}}$ on tape

Arcs labeled: topic, x-target-location
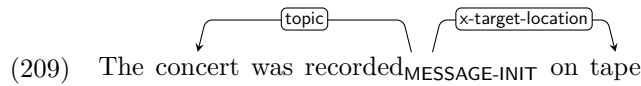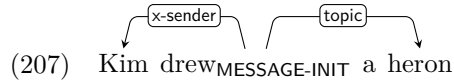
The result of recording something gets the target-content role:

(210)　Kim drew$_{\text{MESSAGE-INIT}}$ a picture

Arcs labeled: x-sender, target-content

(211)　Kim wrote$_{\text{MESSAGE-INIT}}$ Sandy a letter

Arcs labeled: x-sender, x-experiencer, target-content

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

Arcs labeled: x-sender, target-content, x-target-location, m-means, has-quality, x-depictive

(213)　The band recorded$_{\text{MESSAGE-INIT}}$ an album

Arcs labeled: x-sender, target-content

Predicates of perception use MESSAGE, including mental perception:

(214)　Kim saw$_{\text{MESSAGE}}$ a flower

Arcs labeled: x-experiencer, topic

51
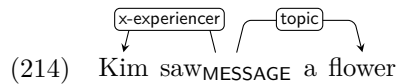
(215) Kim found$_{\text{MESSAGE}}$ the flower beautiful$_{\text{QUALITY}}$

(216) Kim thinks$_{\text{MESSAGE}}$ Sandy is a liar

(217) Kim thinks$_{\text{MESSAGE}}$ Sandy a liar$_{\text{MESSAGE}}$

(218) Kim saw$_{\text{MESSAGE}}$ Sandy swim$_{\text{UNANCHORED-MOTION}}$

(219) Kim wants$_{\text{MESSAGE}}$ to swim$_{\text{UNANCHORED-MOTION}}$

(220) Kim wants$_{\text{MESSAGE}}$ Sandy to swim$_{\text{UNANCHORED-MOTION}}$

(221) Kim seems$_{\text{MESSAGE}}$ happy$_{\text{MESSAGE}}$

(222) Kim seems$_{\text{MESSAGE}}$ happy$_{\text{MESSAGE}}$ to Sandy

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

Predicates that denote the initiation of perception (e.g., by acquiring knowledge, or observation, or reasoning), use MESSAGE-INIT:

(224) The Thought Police observed$_{\text{MESSAGE-INIT}}$ Winston

(225) Kim studies$_{\text{MESSAGE-INIT}}$ linguistics

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

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

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

(229)   The jury found$_{\text{MESSAGE-INIT}}$ Kim guilty$_{\text{SCENE}}$ of the crime$_{\text{ACTIVITY}}$
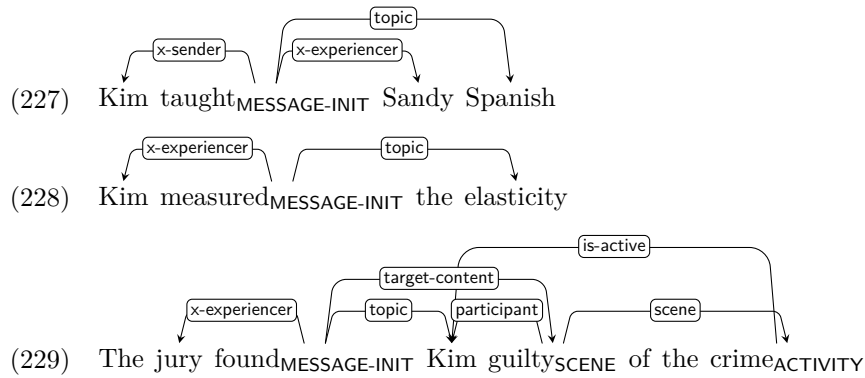
Predicates that denote the deinitiation of perception use MESSAGE-DEINIT:

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

(231)   Kim forgot$_{\text{MESSAGE-DEINIT}}$ about the cake
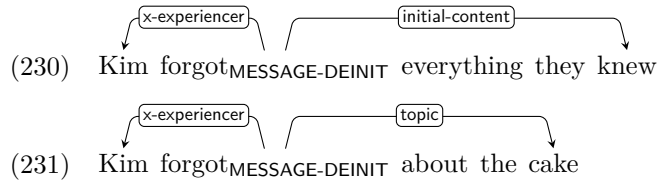
And finally, perception (here: remembering something) that was meant to happen but didn't is framed as MESSAGE-PREVENTION:

(232)   Kim forgot$_{\text{MESSAGE-PREVENTION}}$ to take the trash out
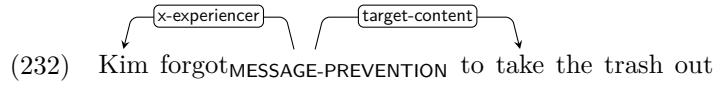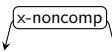
2.34 🕸 NONCOMP

Used to mark syntactic arguments that are thought of as part of the predicate, as in verbal idioms, weather verbs, inherently reflexive verbs, existential *there*, or other fixed expressions.
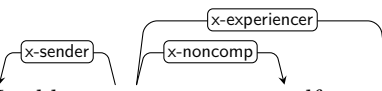
(233) Kim kicked$_\text{DESTRUCTION}$ the bucket
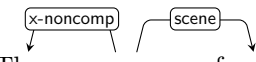
(234) It is raining$_\text{STATE}$
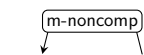
(235) I address$_\text{MESSAGE-INIT}$ myself to you

(236) There was$_\text{SCENE}$ a famine

(237) fountain pen$_\text{CLASS}$
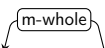
Light verbs, on the other hand, are treated with SCENE, see Section 2.37.
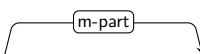
2.35 🧩 PART-WHOLE

part is part of whole.
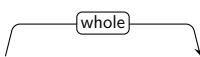
(238) Kim 's leg$_{\text{CLASS}}$
       [m-whole]

(239) a man$_{\text{CLASS}}$ with a mustache
       [m-part]

(240) part$_{\text{PART-WHOLE}}$ of the year
       [whole]

(241) wheat contains$_{\text{PART-WHOLE}}$ gluten
       [whole] [part]

2.36 🐕 POSSESSION

possessor possesses or controls the possessed.

(242) Kim 's house_{CLASS}
    m-possessor

(243) Kim owns_{POSSESSION} a house
    possessor   *possessed*

(244) The house belongs_{POSSESSION} to Kim
    possessed   *possessor*

(245) the owner_{POSSESSION} of the house
    possessed

(246) Kim has_{POSSESSION} Sandy 's phone
    possessor   *possessed*

(247) Kim bought_{POSSESSION-CHANGE} a house from Sandy
    target-possessor   *initial-possessor*   *possessed*

(248) Sandy sold_{POSSESSION-CHANGE} Kim the house
    initial-possessor   *target-possessor*   *possessed*

(249) Kim kept_{POSSESSION-CONTINUATION} the house
    initial-possessor   *possessed*

(250) Kim lost_{POSSESSION-DEINIT} the house
    initial-possessor   *possessed*

(251) Caesar conquered_{POSSESSION-INIT} Gaul
    target-possessor   *possessed*

(252) Caesar 's conquest_{POSSESSION-INIT} of Gaul
    target-possessor   *possessed*

(253) Kim owes_{POSSESSION-CHANGE-NECESSITY} Sandy money
    initial-possessor   *target-possessor*   *possessed*

2.37 🧑‍🤝‍🧑 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, which needs an extra dependency link. In the following examples, we show the annotations for both the matrix predicate and the embedded predicate in one graph.

(254) The concert_MESSAGE-INIT began_SCENE-INIT
        [target-scene]

(255) The concert_MESSAGE-INIT continued_SCENE-CONTINUATION
        [initial-scene]

(256) The concert_MESSAGE-INIT finished_SCENE-DEINIT
        [initial-scene]

(257) The shouting_MESSAGE-INIT intensified_SCENE-CONTINUATION
        [initial-scene]

(258) The shouting_MESSAGE-INIT faded_SCENE-DEINIT
        [initial-scene]

(259) A coup_EXPERIENCE was attempted_SCENE-INIT
        [target-scene]

(260) Kim finished_SCENE-DEINIT their work_ACTIVITY
        [is-active] [participant] [initial-scene]

(261) Swift action prevented_SCENE-PREVENTION an outbreak_SCENE-INIT of measles_EXPERIENCE
        [x-causer] [target-scene] [target-scene]

(262) Kim refrained_SCENE-PREVENTION from going_LOCATION-CHANGE
        [has-location] [participant] [target-scene]

(263) Kim prevented_SCENE-PREVENTION Sandy from going_LOCATION-CHANGE
        [x-causer] [target-scene] [participant] [has-location]

(264) Kim saved_SCENE-PREVENTION Sandy from the dragon_CLASS
        [x-causer] [target-scene] [participant] [x-experiencer]

(265) Kim plays_SCENE tennis_ACTIVITY
        [is-active] [participant] [scene]

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

(267) Kim gave_{SCENE} Sandy a kick_{HITTING}
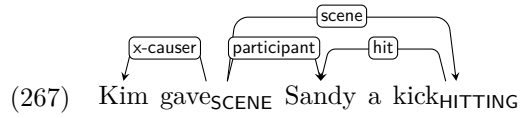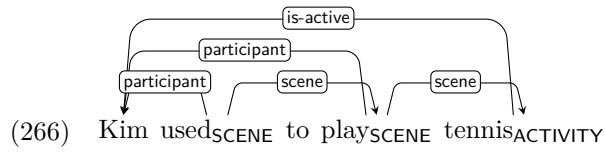
The modifier relation **m-scene** is used when a syntactic dependeny points from an argument to a predicate, as, e.g., with relative clauses or sentence adverbs.

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

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

(270) I devoted_{SCENE-INIT} myself instead_{SEQUENCE} to geography
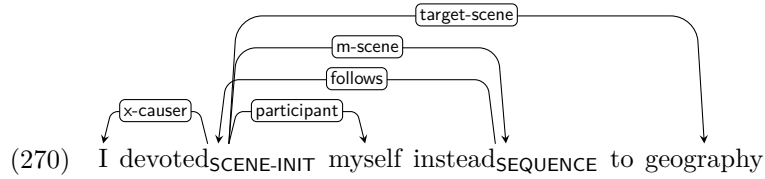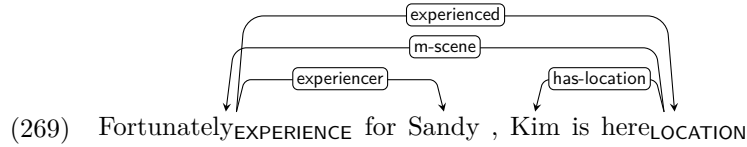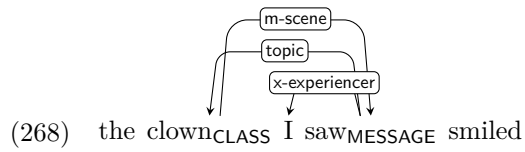
2.38 📢 SENDING

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

(271)   According to Kim , it is raining$_{\textsf{STATE}}$
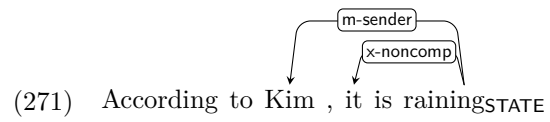
For more uses, see MESSAGE (Section 2.33).
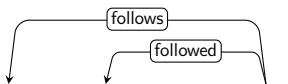
2.39 ➡ SEQUENCE

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

(272) Form follows$_{\mathsf{SEQUENCE}}$ function

(273) Cook is Jobs 's successor$_{\mathsf{SEQUENCE}}$
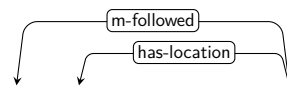
(274) Das fußt$_{\mathsf{SEQUENCE}}$ auf einer falschen Vorstellung

(275) Kim deduced$_{\mathsf{SEQUENCE}}$ the truth from the clues

(276) Given that I 'm tired , I wo n't be there$_{\mathsf{LOCATION}}$

2.40 🕹 CAUSATION

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

(277)   Kim broke_{STATE-CHANGE} the glass
> x-causer · has-state

(278)   The knife cut_{STATE-CHANGE} the bread
> x-causer · has-state

(279)   Kim cut_{STATE-CHANGE} the bread with a knife
> x-causer · has-state · m-means

(280)   The war caused_{CAUSATION} a famine
> causer · result

(281)   There was_{SCENE} a famine because of the war
> x-noncomp · scene · m-causer

(282)   Der Wasserdruck stieg_{QUANTITY-CHANGE} , wodurch der Brunnen überfloss
> has-quantity · m-result

(283)   Die Qualität ist der Motivation geschuldet_{CAUSATION}
> result · causer

(284)   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:

(285)   Kim went_{LOCATION-CHANGE} to town to buy food
> has-location · target-location · m-explanation
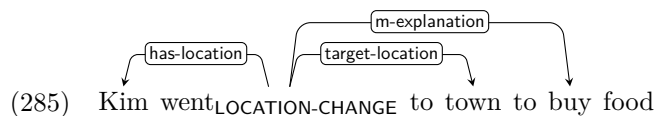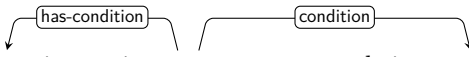
2.41 📜 CONDITION

Special case of SEQUENCE where condition (aka followed) is a condition to has-condition (aka follows).
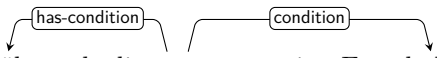
(286) I will join_{SOCIAL-RELATION-INIT} the club if they ask me

has-social-relation / m-condition

(287) The start date is contingent_{CONDITION} on their approval

has-condition / condition

(288) Eine Aussöhung bedingt_{SEQUENCE} eine Entschuldigung

has-condition / condition

2.42 🚫 EXCEPTION

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

(289)　Except for Kim , everybody joined~SOCIAL-RELATION-INIT~

with the annotations:
- m-exception (from "Except for Kim" to "joined")
- has-social-relation (from "everybody" to "joined")
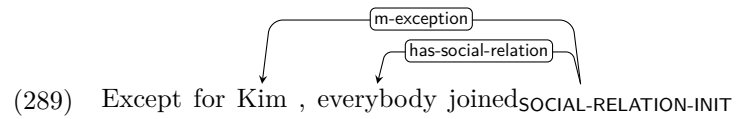
2.43 💥 REACTION

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

(290) Kim reacted$_{\text{SEQUENCE}}$ to the allegations with a denial$_{\text{MESSAGE-INIT}}$

with labeled arcs: x-sender, reaction, trigger, x-causer
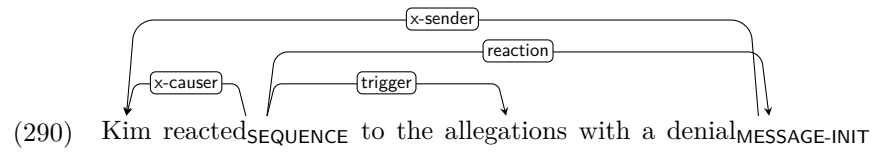
2.44 🤧 RESULTATIVE

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.

(291) Kim hammered$_{\text{HITTING}}$ the metal flat$_{\text{STATE}}$

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

(293) Kim sneezed$_{\text{EXPERIENCE}}$ the napkin off the table$_{\text{CLASS}}$
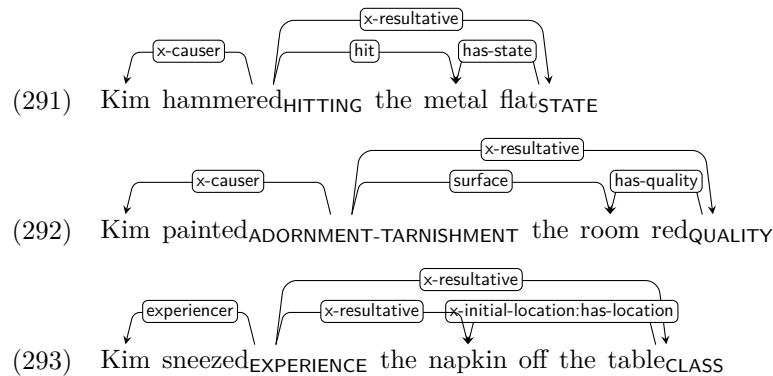
In the last example, we use x-initial-location:has-location to specify not only the role of the napkin in the resulting event (has-location) but also that of the table (initial-location). Using x-has-location would be imprecise because we would then assume that the table has location.

65

2.45 🤝 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.

(294) Kim 's friend_{SOCIAL-RELATION}
    [has-social-relation]

(295) Kim is my cousin_{SOCIAL-RELATION}
    [social-relation] [has-social-relation]

(296) Kim and Sandy are friends_{SOCIAL-RELATION}
    [social-relation]

(297) Kim is friends_{SOCIAL-RELATION} with Sandy
    [has-social-relation] [social-relation]

(298) Kim works_{SOCIAL-RELATION} at Google
    [has-social-relation] [social-relation]

(299) Kim works_{SOCIAL-RELATION} for Sandy
    [has-social-relation] [social-relation]

(300) Kim emcees_{SOCIAL-RELATION}
    [has-social-relation]

(301) Kim is hosting_{SOCIAL-RELATION} the party
    [has-social-relation] [social-relation]

(302) Kim is under house arrest_{SOCIAL-RELATION}
    [has-social-relation]

(303) Kim 's sentence_{SOCIAL-RELATION} was suspended
    [has-social-relation]

(304) Kim married_{SOCIAL-RELATION-INIT} Sandy
    [has-social-relation] [target-social-relation]

(305) The official married_{SOCIAL-RELATION-INIT} Kim to Sandy
    [x-causer] [target-social-relation] [has-social-relation]

(306) The official married_{SOCIAL-RELATION-INIT} Kim and Sandy
    [x-causer] [has-social-relation]

(307) Kim divorced_{SOCIAL-RELATION-DEINIT} Sandy
    [has-social-relation] [initial-social-relation]

(308) Kim befriended_{SOCIAL-RELATION-INIT} Sandy
    [has-social-relation] [target-social-relation]

(309) Kim took_{SOCIAL-RELATION-INIT} the job
    [has-social-relation] [target-social-relation]

(310) Kim joined_{SOCIAL-RELATION-INIT} Google
    [has-social-relation] [target-social-relation]

(311) Kim joined_{SOCIAL-RELATION-INIT} a union
    [has-social-relation] [target-social-relation]

(312) Sandy fired_{SOCIAL-RELATION-DEINIT} Kim from their job
    [x-causer] [initial-social-relation] [has-social-relation]

(313) Kim left_{SOCIAL-RELATION-DEINIT} Google
    [has-social-relation] [initial-social-relation]

(314) Kim assumed_{SOCIAL-RELATION-INIT} office
    [has-social-relation] [target-social-relation]

(315) The judge sentenced_{SOCIAL-RELATION-INIT} Kim to three days in prison
    [x-causer] [target-social-relation] [has-social-relation]

(316) Kim was pardoned_{SOCIAL-RELATION-DEINIT}
    [has-social-relation]

2.46 ⏰ TIME

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

(317) Kim swims_{UNANCHORED-MOTION} on Monday
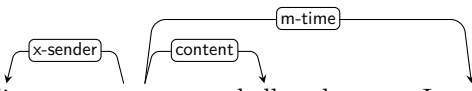
(318) Kim sneezed_{EXPERIENCE} twice

(319) Kim swam_{UNANCHORED-MOTION} for an hour

(320) Kim says_{MESSAGE-INIT} hello whenever I meet them

(321) Once_{TIME} when I was six years old

2.46 ⏰ TIME

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

(317) Kim swims$_{\text{UNANCHORED-MOTION}}$ on Monday
— in-motion, m-time

(318) Kim sneezed$_{\text{EXPERIENCE}}$ twice
— experiencer, m-time

(319) Kim swam$_{\text{UNANCHORED-MOTION}}$ for an hour
— in-motion, m-time

(320) Kim says$_{\text{MESSAGE-INIT}}$ hello whenever I meet them
— x-sender, content, m-time

(321) Once$_{\text{TIME}}$ when I was six years old

3   Argument Structure and Frame Choice

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.

(322)   Kim drove$_\text{LOCATION-CHANGE}$ to Boston
   has-location target-location

(323)   Kim drove$_\text{LOCATION-CHANGE}$ the car to Boston
   x-causer target-location has-location

(324)   They plundered$_\text{POSSESSION-CHANGE}$ Rome
   target-possessor initial-possessor

(325)   Kim undressed$_\text{WRAPPING-WEARING-DEINIT}$
   initial-wearer
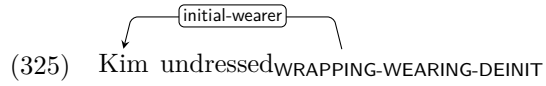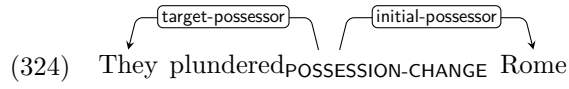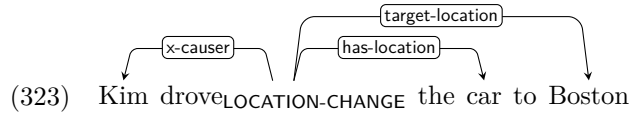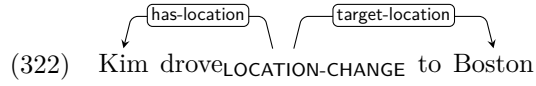
3.2 Arguments Determine Frames

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.

(326) a. my first drawing_{MESSAGE}   [m-sender] [m-rank]

b. my first drawing_{MESSAGE} of a snake   [m-sender] [m-rank] [topic]

(327) a. Kim helped_{SCENE-INIT} Sandy   [x-causer] [participant]

b. Kim helped_{SCENE-INIT} Sandy clean the dishes   [x-causer] [participant] [target-scene]

(328) a. Kim worked_{EXPERIENCE}   [x-causer]

b. Kim worked_{EXPERIENCE} on the drawing   [x-causer] [experiencer]
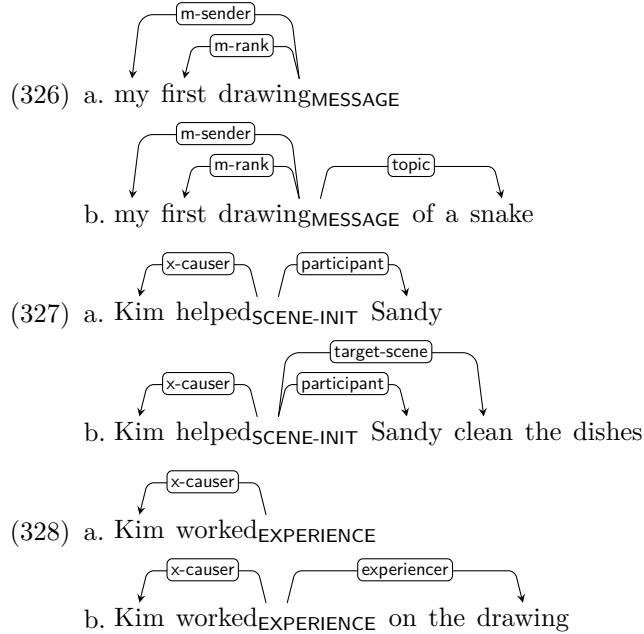
3.3 Shadow and Default Arguments

Arguments that determine a predicate's superframe include *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 (329), mucus and air in (330), groceries in (331), or sun in (332).

(329)   Kim deboned$_{\text{PART-WHOLE-DEINIT}}$ the fish

(330)   Kim sneezed$_{\text{EXCRETION}}$

(331)   Our local supermarket delivers$_{\text{LOCATION-INIT}}$

(332)   at sunrise$_{\text{LOCATION-CHANGE » TIME}}$

3.4 Predicates that Refer to a Shadow Argument

A special case of shadow argument are those that the predicate itself refers to. For example, the predicate *friend* evokes a SOCIAL-RELATION frame, but also refers to the filler of that frame's social-relation role. And the predicate *model* evokes a MESSAGE frame, but also refers to the filler of that frame's topic role, and so on.

(333)   Kim 's friend_{SOCIAL-RELATION}

(334)   the drawing and its model_{MESSAGE}

(335)   ein Großteil_{PART-WHOLE} des digitalen Übergangs

(336)   Obama special assistant_{SOCIAL-RELATION}

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

For example, consider (337), 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 the subject position goes to that causer, as in (338). Thus, we treat this as a different framing with a different causer, rather than a more explicit version of the same framing. Likewise, (339) and (340) are two different framings, one with *price* as has-state, and one with *butter*.

(337) The knife cut_{STATE-CHANGE} the butter

(338) Kim cut_{STATE-CHANGE} the butter with the knife

(339) The price is high_{QUANTITY}

(340) The butter is high_{QUANTITY} in price_{QUALITY}
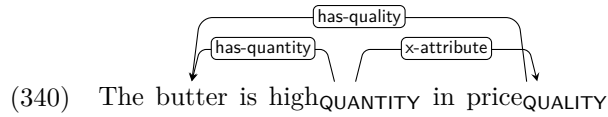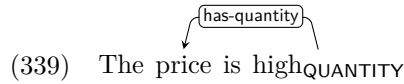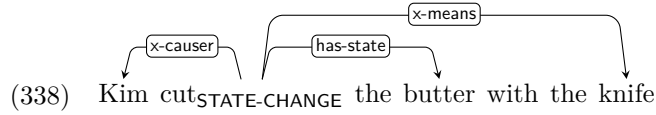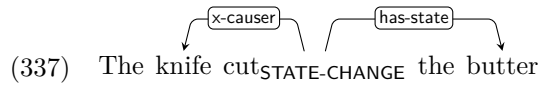
3.6 When in Doubt, Treat Different Syntactic Frames of the Same Predicate Consistently

For example, in (341), *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 (342), prefer it.

(341)   Kim chased_{UNACHORED-MOTION} Sandy around the block

(342)   Kim chased_{UNACHORED-MOTION} after Sandy
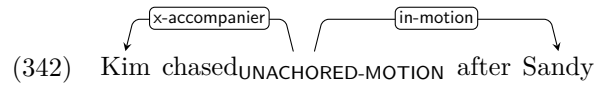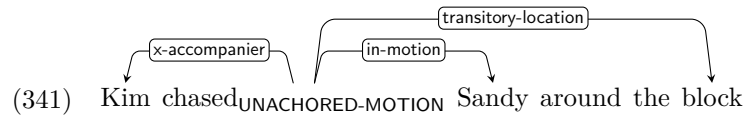
3.7 However, Different Senses of a Predicate Can Have Different Arguments and Therefore Different Superframes

One special case of this is when a predicate occurs as part of an opaque fixed expression, like *hand* in *close at hand*. In this case, *hand* is not annotated with CLASS, but with NONCOMP.

(343)   I have seen them intimately , close$_{\textsf{LOCATION}}$ at hand$_{\textsf{NONCOMP}}$
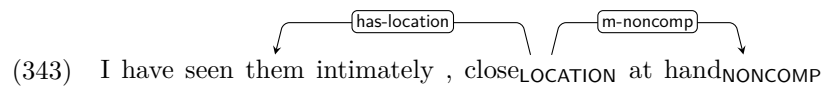
3.8 Look Up Unfamiliar Words in a Dictionary

When you come across an unfamilar predicate, you might not be able to determine what arguments it has, and consequenlty what the most appropriate superframe is, from this one context alone. Use a dictionary such as Wiktionary in this case. In the following example, I found that *toss off* can mean "to assemble hastily"[1], thus went for the TRANSFORMATION-CREATION frame.

(344) So I tossed_{TRANSFORMATION-CREATION} off this drawing

[Dependency diagram: m-explanation, x-causer, created, m-noncomp arcs over "So I tossed off this drawing"]

―――――――――
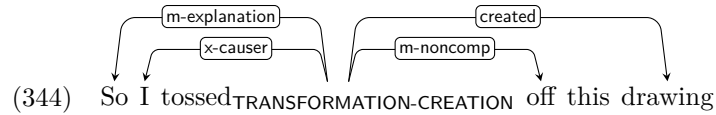
[1]`https://en.wiktionary.org/w/index.php?title=toss_off&oldid=77814489`, retrieved 2024-05-28

3.9 Symmetric Argument Pairs

Some predicates have a pair of arguments that are semantically symmetric. In such cases, assign the first role to the syntactically less oblique argument.

(345) distinguish$_{\text{COMPARISON}}$ China from Arizona

with the roles: compared, reference
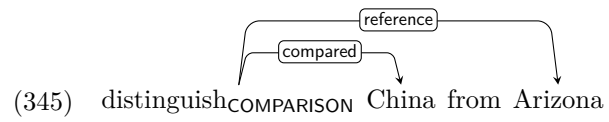
3.10 When to Use SCENE

SCENE should definitely be used if a predicate can add aspectual meaning to predicates of more than one type. For example, English *make* can be used with states and activities, so *make* itself should be neither STATE nor ACTIVITY but SCENE.

(346) Kim made$_{\text{SCENE-INIT}}$ Sandy dance$_{\text{ACTIVITY}}$

(347) Kim made$_{\text{SCENE-INIT}}$ Sandy tired$_{\text{STATE}}$
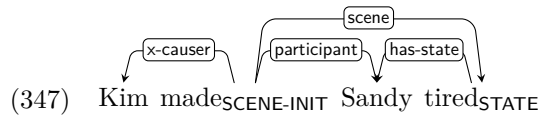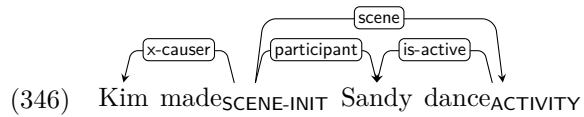
On the other hand, if a predicate is restricted to subordinate predicates of a certain type, it can have the same type.

(348) I lived$_{\text{EXPERIENCE}}$ my life

(349) They number$_{\text{QUANTITY}}$ in the thousands
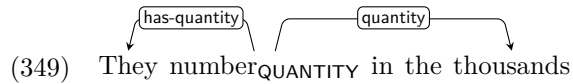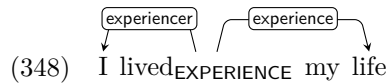
4   Aspect, Mode, and Polarity

4.1   Aspect Annotation is wrt. the Superframe, Not the Predicate

(350)   Kim lost$_{\text{POSSESSION-DEINIT}}$ the house

In (350), losing is framed as POSSESSION-DEINIT because a state of possession ends. POSSESSION-INIT would be incorrect because although a losing event begins, the state that the superframe POSSESSION describes ends. In general, aspectual suffixes modify superframes, they do not necessarily indicate the aspectual class of the predicate (here: *lost*).

5 Construction-specific Guidelines

5.1 Participant Nouns

Some nouns denote a person who participates in a specific type of scene in a specific 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:

(351)   With that, my critic_MESSAGE [topic] sat down again

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

(352)   He is a teacher_CLASS [has-class]

(353)   He is our teacher_SOCIAL-RELATION [social-relation] [has-social-relation]

(354)   She is the president_SOCIAL-RELATION [has-social-relation] of our club [social-relation]

5.2 Particle Verbs

We follow the PARSEME classification of particle verbs into spatial, semi-non-compositional, and fully non-compositional ones (Savary et al., 2017; Ramisch et al., 2018, 2020; Savary et al., 2023).

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.

(355) get_LOCATION-DEINIT the lid off

```
                  initial-location
                  has-location
```

(356) You may go_LOCATION-INIT in now

```
        has-location    m-time
                        target-location
```
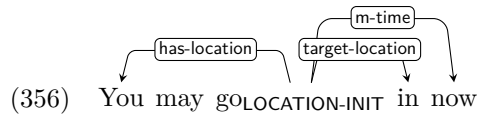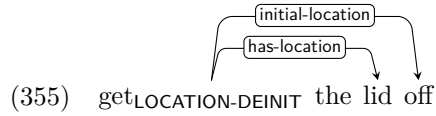
In semi-non-compositional particle verbs, where the particle adds a partially predictable but nonspatial meaning to the verb, use an appropriate role.

(357) eat_INGESTION up the cookies   (implies *eat* the cookies)

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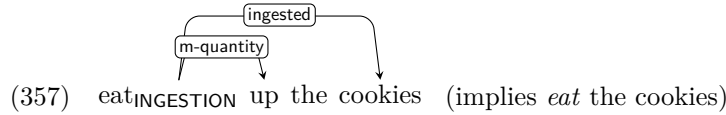
In fully non-compositional particle verbs, where the meaning is not predictable, use m-noncomp.

(358) do_EXPERIENCE somebody in   (does not imply *do* somebody)

```
              m-noncomp
        experiencer
```
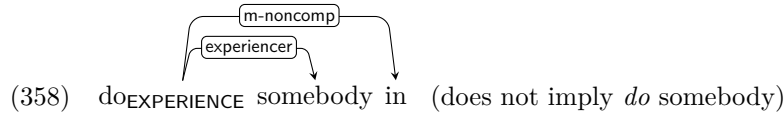
5.3 Pronouns with Arguments

Definite pronouns are normally annotated with IDENTIFICATION, indefinite ones with CLASS, and they do not have any arguments. However, sometimes they do have arguments, in which case give them their antecendent's superframe:

(359)   The picture was that_{MESSAGE} of the boa

(360)   I drew a picture of a dog , one_{MESSAGE} of a cat , and another_{MESSAGE} of a sheep

5.4 Nominal Copula Constructions

In nominal copula constructions, the copula subject is interpreted as a non-core argument – typically x-has-class if the predicate is indefinite, and x-identified if it is definite.

(361)   This is the book$_\textsf{MESSAGE}$ I like

(362)   My drawing was not a picture$_\textsf{MESSAGE}$ of a hat
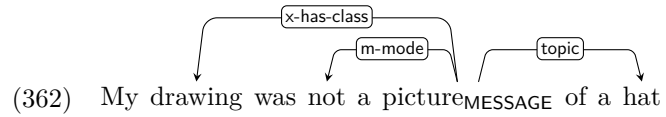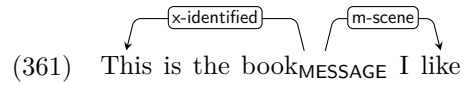
5.5 Predicative Adpositions

At the moment, Superframes follows UD's principle of treating adpositions like case markers, dependent on their objects. This greatly simplifies the annotation of adpositional arguments. On the other hand, it sometimes creates problems. An adposition, added to a noun, can cause a new superframe to be evoked, which it would be simpler to annotate if we could just label the adposition with it. Consider the following examples, where we nonstandardly treat the adpositions *in*, *out of*, and *from* as adpositions. The annotation is quite natural:

(363) a. Ich will_MESSAGE in_LOCATION-CHANGE die Berge_CLASS

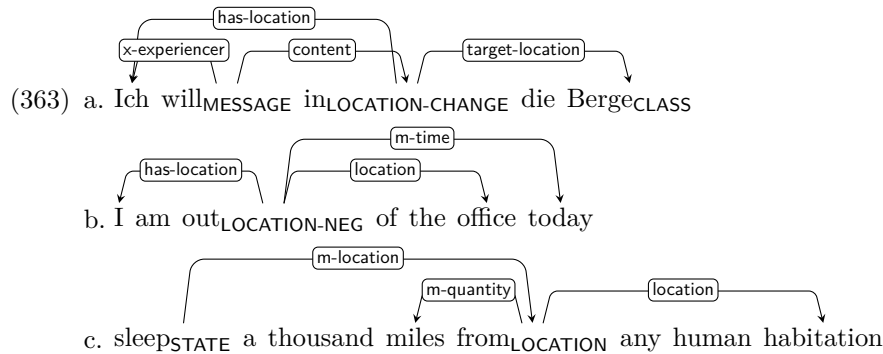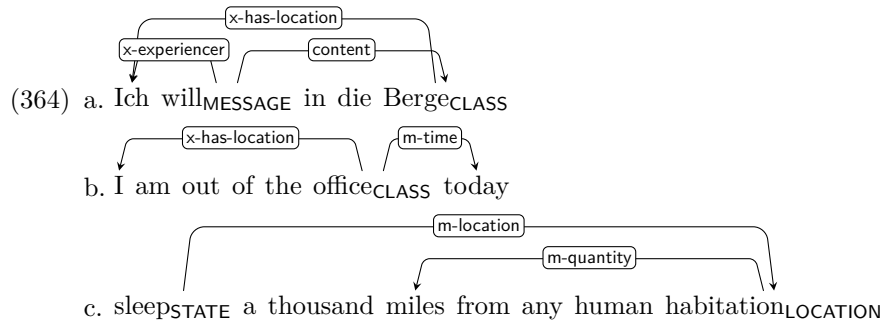b. I am out_LOCATION-NEG of the office today

c. sleep_STATE a thousand miles from_LOCATION any human habitation

But since we don't treat adpositions as predicates, we are forced to choose the following, more opaque and less detailed annotation:

(364) a. Ich will_MESSAGE in die Berge_CLASS

b. I am out of the office_CLASS today

c. sleep_STATE a thousand miles from any human habitation_LOCATION

In (364-a) and (364-b), We are forced to give *Berge* and *office* an x-has-location role, which is not part of the frame evoked by these words alone; we have to assume it is added by adding the adposition. We also do not have a way to indicate that the additional superframe introduced by the non-core subject is LOCATION-INIT and LOCATION-NEG, respectively. In (364-c), there is an even more severe problem: the quantity modifier *a thousand miles* semantically modifies the LOCATION frame evoked by the adposition *from*, but we have to attach it to *habitation*, which evokes a *different* LOCATION frame which does not have a quantity modifier. Confusion ensues, but for now we have to live with these issues.

6 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-PREVENTION?), 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.

References

Baker, C. F., Fillmore, C. J., and Lowe, J. B. (1998). The Berkeley FrameNet project. In *COLING 1998 Volume 1: The 17th International Conference on Computational Linguistics*.

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.

Feng, L., Williamson, G., He, H., and Choi, J. D. (2022). Widely Interpretable Semantic Representation: Frameless Meaning Representation for Broader Applicability.

Kipper Schuler, K. (2005). *VerbNet: A broad-coverage, comprehensive verb lexicon*. PhD thesis, University of Pennsylvania.

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

Pustejovsky, J. (1995). *The Generative Lexicon*. MIT Press, Cambridge, MA.

Ramisch, C., Cordeiro, S. R., Savary, A., Vincze, V., Barbu Mititelu, V., Bhatia, A., Buljan, M., Candito, M., Gantar, P., Giouli, V., Güngör, T., Hawwari, A., Iñurrieta, U., Kovalevskaitė, J., Krek, S., Lichte, T., Liebeskind, C., Monti, J., Parra Escartín, C., QasemiZadeh, B., Ramisch, R., Schneider, N., Stoyanova, I., Vaidya, A., and Walsh, A. (2018). Edition 1.1 of the PARSEME shared task on automatic identification of verbal multiword expressions. In Savary, A., Ramisch, C., Hwang, J. D., Schneider, N., Andresen, M., Pradhan, S., and Petruck, M. R. L., editors, *Proceedings of the Joint Workshop on Linguistic Annotation, Multiword Expressions and Constructions (LAW-MWE-CxG-2018)*, pages 222–240, Santa Fe, New Mexico, USA. Association for Computational Linguistics.

Ramisch, C., Savary, A., Guillaume, B., Waszczuk, J., Candito, M., Vaidya, A., Barbu Mititelu, V., Bhatia, A., Iñurrieta, U., Giouli, V., Güngör, T., Jiang, M., Lichte, T., Liebeskind, C., Monti, J., Ramisch, R., Stymne, S., Walsh, A., and Xu, H. (2020). Edition 1.2 of the PARSEME shared task on semi-supervised identification of verbal multiword expressions. In Markantonatou, S., McCrae, J., Mitrović, J., Tiberius, C., Ramisch, C., Vaidya, A., Osenova, P., and Savary, A., editors, *Proceedings of the Joint Workshop on Multiword Expressions and Electronic Lexicons*, pages 107–118, online. Association for Computational Linguistics.

Savary, A., Ben Khelil, C., Ramisch, C., Giouli, V., Barbu Mititelu, V., Hadj Mohamed, N., Krstev, C., Liebeskind, C., Xu, H., Stymne, S., Güngör, T., Pickard, T., Guillaume, B., Bejček, E., Bhatia, A., Candito, M., Gantar, P., Iñurrieta, U., Gatt, A., Kovalevskaite, J., Lichte, T., Ljubešić, N., Monti, J., Parra Escartín, C., Shamsfard, M., Stoyanova, I., Vincze, V., and Walsh, A. (2023). PARSEME corpus release 1.3. In Bhatia, A., Evang, K., Garcia, M., Giouli, V., Han, L., and Taslimipoor, S., editors, *Proceedings of the 19th Workshop on Multiword Expressions (MWE 2023)*, pages 24–35, Dubrovnik, Croatia. Association for Computational Linguistics.

Savary, A., Ramisch, C., Cordeiro, S., Sangati, F., Vincze, V., QasemiZadeh, B., Candito, M., Cap, F., Giouli, V., Stoyanova, I., and Doucet, A. (2017). The PARSEME shared task on automatic identification of verbal multiword expressions. In Markantonatou, S., Ramisch, C., Savary, A., and Vincze, V., editors, *Proceedings of the 13th Workshop on Multiword Expressions (MWE 2017)*, pages 31–47, Valencia, Spain. Association for Computational Linguistics.