

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:

Superframe	Roles			Sec.
IDENTIFICATION		identified	identifier	2.1
ORDER		has-order	order	2.2
CLASS		has-class	class	2.3
Transformation-Creation		material	created	2.4
Reproduction		original	copy	2.5
QUALITY		has-quality	quality	2.6
STATE		has-state	state	2.7
STATE-CHANGE		has-state	target-state	2.8
Destruction		destroyed		2.9
EXPERIENCE		experiencer	experienced	2.10
ACTIVITY		is-active	activity	2.11
MARKER		has-marker	marker	2.12
ACCOMPANIMENT		accompanied	accompanier	2.13
Depictive		has-depictive	depictive	2.14
ASSET		has-asset	asset	2.15
CAUSATION		caused	causer	2.16
Resultative		has-resultative	resultative	2.17
COMPARISON		compared	reference	2.18
Concession		assertion	conceded	2.19
EXPLANATION		explained	explanation	2.20
Purpose		has-purpose	purpose	2.21
LOCATION		has-location	location	2.22
Wrapping-Wearing		worn	wearer	2.23
Wrapping-Wearing-Init	initial-wearer	worn	target-wearer	2.24
Wrapping-Wearing-Deinit		worn		2.25
Adornment-Tarnishment		ornament	surface	2.26
Adornment-Tarnishment-Init		ornament	target-surface	2.27
Adornment-Tarnishment-Deinit	initial-surface	ornament		2.28
LOCATION-INIT		has-location	transitory-location	2.29
Ingestion		ingested	target-location	2.30
Hitting		hitting	ingester	2.31
LOCATION-DEINIT	initial-location	has-location	hit	2.32
Excretion	excreter	excreted	transitory-location	2.33
LOCATION-CHANGE	initial-location	has-location	transitory-location	2.34
Motion		has-location	transitory-location	2.35
MEANS		has-means	means	2.36
MESSAGE		topic	content	2.37
MESSAGE-INIT		topic	target-message	2.38
MESSAGE-DEINIT	initial-message	topic		2.39
PART-WHOLE		part	whole	2.40
POSSESSION		possessed	possessor	2.41
POSSESSION-INIT		possessed	target-possessor	2.42
POSSESSION-DEINIT	initial-possessor	possessed		2.43
POSSESSION-CHANGE	initial-possessor	possessed	target-possessor	2.44
POSSESSION-CHANGE-NECESSITY	initial-possessor	possessed	target-possessor	2.45
POSSESSION-CONTINUATION	initial-possessor	possessed		2.46
QUANTITY		has-quantity	quantity	2.47
SENDING		sent	sender	2.48
SEQUENCE		follows	followed	2.49
SOCIAL-RELATION		has-social-relation	social-relation	2.50
SOCIAL-RELATION-INIT		has-social-relation	target-social-relation	2.51
SOCIAL-RELATION-DEINIT	initial-social-relation	has-social-relation		2.52
TIME		has-time	time	2.53
SCENE		participant	scene	2.54
SCENE-INIT		participant	target-scene	2.55
SCENE-DEINIT	initial-scene	participant		2.56
SCENE-CONTINUATION	initial-scene	participant		2.57
SCENE-PREVENTION		participant	target-scene	2.58
SCENE-NECESSITY		participant	target-scene	2.59
SCENE-POSSIBILITY		participant	target-scene	2.60
NONCOMP		has-noncomp	noncomp	2.61

Table 1: The superframes and their roles.

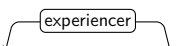
1. Every content word (verb, noun, pronoun, adjective, or adverb) is a *predicate*. Every predicate evokes one of a few dozen *superframes*, which determines its coarse semantic class and the possible role labels for its arguments.
2. The syntactic *dependents* of a predicate can be *core arguments*,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

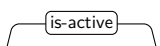
1.1 Core Arguments

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^{EXPERIENCE}

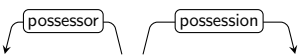


(2) Kim is partying^{ACTIVITY}




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


(3) Kim owns^{POSSESSION} a house



(4) The house belongs^{POSSESSION} to Kim



(5) Kim seems^{MESSAGE} happy



1.2 Aspect

Rather than a static relationship between two entities, many verbs (and other predicates) denote a change (or absence of change) in such a relationship. We sort such predicates into a few coarse aspectual classes. For example, initiation (-INIT) means a state is begun or worked towards, deinitiation (-DEINIT) means a state is ended, completed, or its end is worked towards, change (-CHANGE) combines both, where one state is replaced by another, and continuation (-CONT) means a state persists or is even intensified. Accordingly, roles with target-, initial-, or transitory- mark participants at/beyond the end of, at the beginning of, or at some point during the event, respectively.

- (6) Kim got_{POSSESSION-INIT} the house
- (7) Kim lost_{POSSESSION-DEINIT} the house
- (8) Kim sold_{POSSESSION-CHANGE} the house to Sandy
- (9) Kim kept_{POSSESSION-CONT} the house
- (10) Kim went_{LOCATION-CHANGE} from Chicago via Pittsburgh to Boston
- (11) The vase fell_{LOCATION-CHANGE} to the ground
- (12) The vase broke_{STATE-CHANGE}
- (13) Kim befriended_{SOCIAL-RELATION-INIT} Sandy
- (14) Kim married_{SOCIAL-RELATION-INIT} Sandy
- (15) Kim divorced_{SOCIAL-RELATION-DEINIT} Sandy

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

- (16) The concert began_{SCENE-INIT}
- (17) The concert continued_{SCENE-CONT}
- (18) The concert finished_{SCENE-DEINIT}
- (19) The shouting intensified_{SCENE-CONT}
- (20) The shouting faded_{SCENE-DEINIT}
- (21) A coup was attempted_{SCENE-INIT}
- (22) Change is needed_{SCENE-NECESSITY}
- (23) Change is possibility_{SCENE-POSSIBILITY}

1.3 Non-core Arguments

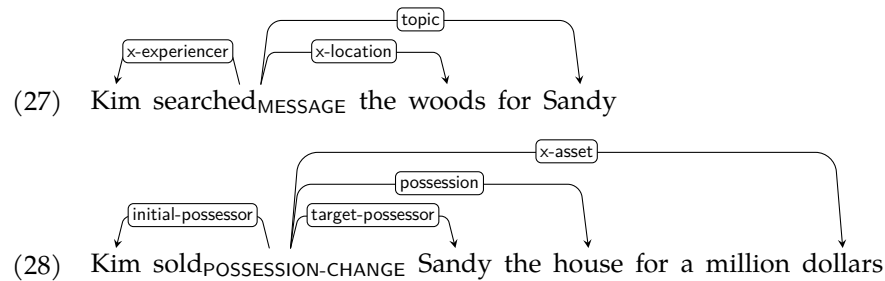
Core arguments always get role labels from the superframe the predicate evokes. But many verbs have more arguments. One common case is a subject that is presented as the causer of the scene. For example, compare (24) with (11). The core scene is the same (same superframe, same arguments). We now assume there is an additional CAUSATION scene with *Kim* as the causer and the core scene as the caused. We denote this by giving *Kim* the caused role label, with an *x-* prefix to mark it as a non-core role.

- (24) Kim threw_{LOCATION-CHANGE} the vase to the ground
- (25) Kim broke_{STATE-CHANGE} the vase

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

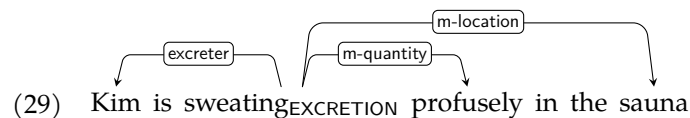
- (26) Kim talked_{MESSAGE} to Sandy about Bali

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



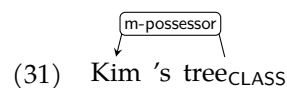
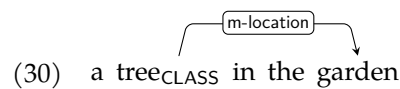
1.4 Modifiers

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



1.5 Nonverbal Predicates

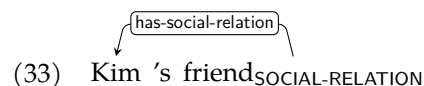
So far, we have only looked at verbal predicates. But of course, there are other types of predicates. An ordinary noun like *tree* evokes the CLASS frame, marking the entity it refers to as being a member of a class (in this case: the class of trees). There are no arguments here because the predicate itself doubles as a referent. However, the predicate can of course be modified:



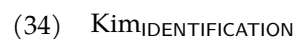
Event nouns evoke event frames and have arguments:



Relational nouns evoke relational frames and have arguments:



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



(35) they_{IDENTIFICATION}

Predicate adjectives most typically denote states or qualities.

(36) I am despicable_{QUALITY}

(37) the dog is tired_{STATE}

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

(38) despicable_{me} IDENTIFICATION

(39) the tired dog_{CLASS}

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

(40) Kim ran_{Motion} fast

(41) Kim ran_{Motion} far

1.6 Figurativity and Idiomaticity

Difficulties in choosing frames often arise because 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.

(42) primeval forest_{CLASS}

(43) colored pencil_{CLASS}

(44) to lay_{LOCATION-CHANGE»MESSAGE-DEINIT} aside my drawings

2 Superframes Reference

2.1 IDENTIFICATION


The identifier identifies the identified.

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

(45) I_{IDENTIFICATION} saw a picture

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

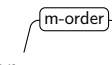
(47) a book called_{IDENTIFICATION} True Stories from Nature



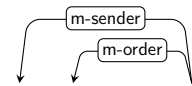
2.2 ORDER

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

(48) Chapter_{MESSAGE} 1



(49) my first drawing_{MESSAGE}



2.3 CLASS

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

Most prototypically evoked by common nouns with no arguments.

(50) swallowing an animal_{CLASS}

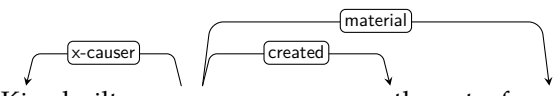
2.4 Transformation-Creation

created is newly created from material, or material is transformed to acquire a new class indicated by created.

(51) I succeeded in making_{Transformation-Creation} my first drawing

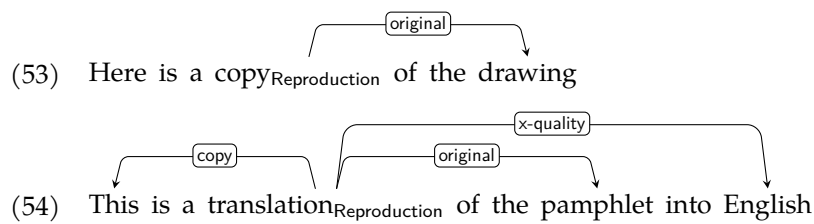


(52) Kim built_{Transformation-Creation} a castle out of sand



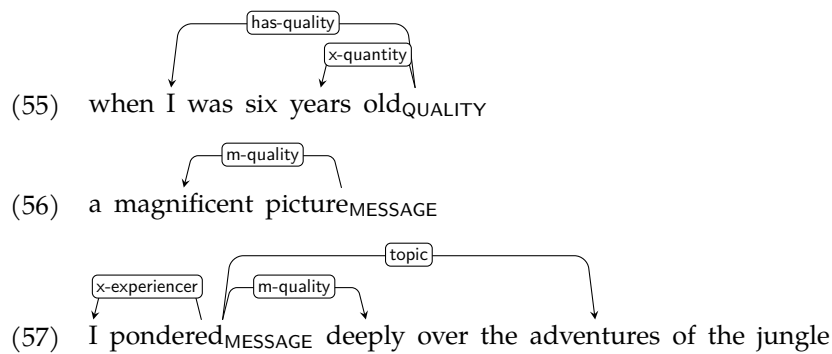
2.5 Reproduction

original continues to exist, and a (modified) copy comes into existence.



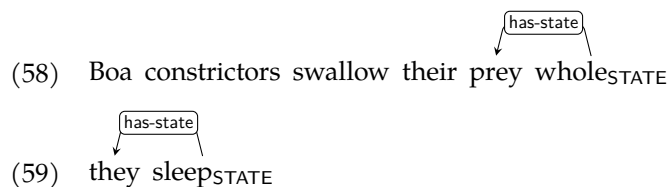
2.6 QUALITY

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



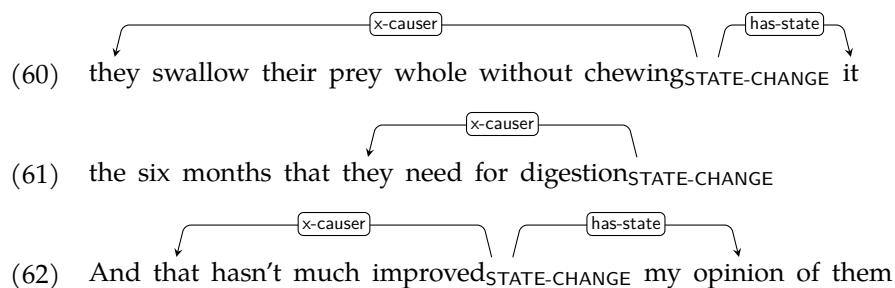
2.7 STATE

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



2.8 STATE-CHANGE

A STATE changes.



2.9 Destruction

destroyed goes out of existence.

(63) Sam 's death_{Destruction}

(64) Sam 's destruction_{Destruction} of the city

2.10 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.

(65) Kim 's adventures_{EXPERIENCE} in the jungle

(66) Kim attacked_{EXPERIENCE} Sandy

(67) I saw_{MESSAGE} a magnificent picture

(68) I pondered_{MESSAGE} deeply

(69) Kim talked_{MESSAGE} to Sandy

(70) Kim did_{SCENE} something nice for Sandy

(71) Kim cooked a meal only to have_{SCENE} Sandy spurn it

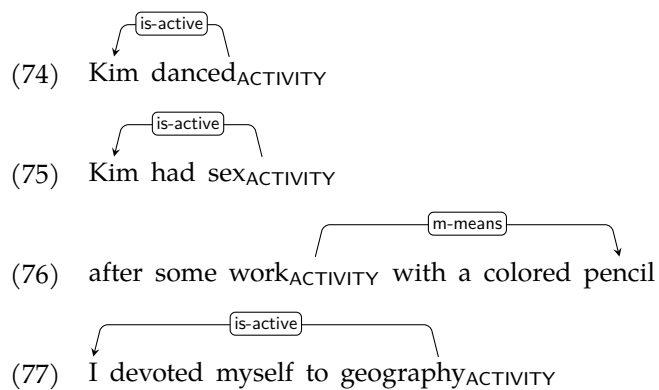
2.11 ACTIVITY

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.

(72) Kim worked_{ACTIVITY}

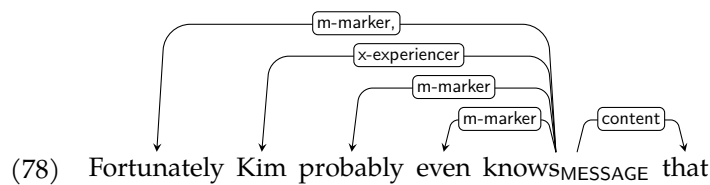
(73) Kim partied_{ACTIVITY}



2.12 MARKER

marker marks has-marker for modal strength, aspect, discourse function, etc.

Umbrella frame for various kinds of predicates that denote properties of propositions rather than scenes, often realized as “sentence adverbs”.



2.13 ACCOMPANIMENT

TBD

2.14 Depictive

TBD

2.15 ASSET

TBD

2.16 CAUSATION

TBD

2.17 Resultative

TBD

2.18 COMPARISON

TBD

2.19 Concession

TBD

2.20 EXPLANATION

TBD

2.21 Purpose

TBD

2.22 LOCATION

TBD

2.23 Wrapping-Wearing

TBD

2.24 Wrapping-Wearing-Init

TBD

2.25 Wrapping-Wearing-Deinit

TBD

2.26 Adornment-Tarnishment

TBD

2.27 Adornment-Tarnishment-Init

TBD

2.28 Adornment-Tarnishment-Deinit

TBD

2.29 LOCATION-INIT

TBD

2.30 Ingestion

TBD

2.31 Hitting

TBD

2.32 LOCATION-DEINIT

TBD

2.33 Excretion

TBD

2.34 LOCATION-CHANGE

TBD

2.35 Motion

TBD

2.36 MEANS

TBD

2.37 MESSAGE

TBD

2.38 MESSAGE-INIT

TBD

2.39 MESSAGE-DEINIT

TBD

2.40 PART-WHOLE

TBD

2.41 POSSESSION

TBD

2.42 POSSESSION-INIT

TBD

2.43 POSSESSION-DEINIT

TBD

2.44 POSSESSION-CHANGE

TBD

2.45 POSSESSION-CHANGE-NECESSITY

TBD

2.46 POSSESSION-CONTINUATION

TBD

2.47 QUANTITY

TBD

2.48 SENDING

TBD

2.49 SEQUENCE

TBD

2.50 SOCIAL-RELATION

TBD

2.51 SOCIAL-RELATION-INIT

TBD

2.52 SOCIAL-RELATION-DEINIT

TBD

2.53 TIME

TBD

2.54 SCENE

TBD

2.55 SCENE-INIT

TBD

2.56 SCENE-DEINIT

TBD

2.57 SCENE-CONTINUATION

TBD

2.58 SCENE-PREVENTION

TBD

2.59 SCENE-NECESSITY

TBD

2.60 SCENE-POSSIBILITY

TBD

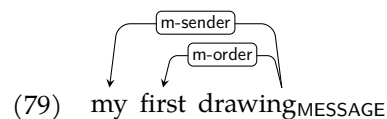
2.61 NONCOMP

TBD

3 Memos

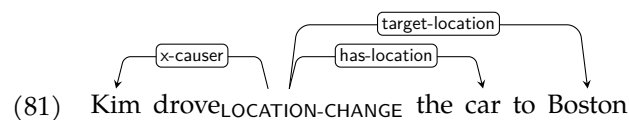
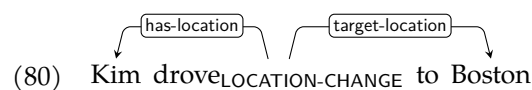
3.1 Arguments Determine Frames

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.



3.2 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.



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