Obligatorification in Syntax

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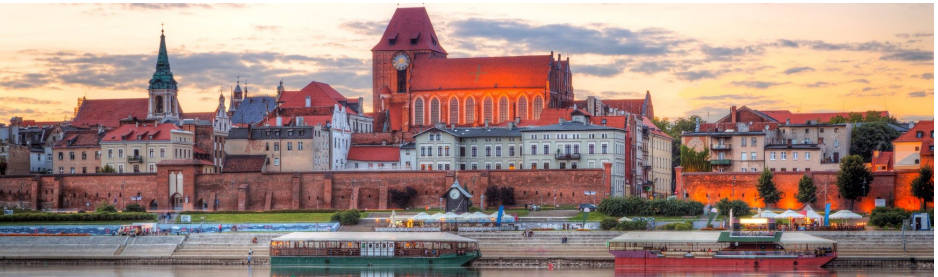
EvoLang XII 2018
Toruń, Poland



ICL 20 2018
Cape Town

Examples for obligatorification

Sanskrit	(NP) *madhye*	> NP *mẽ*
Homeric Greek	ἐν (NP)	> ἐν NP
OldE	*se (N)*	> *the N*
Germanic	(N-)*lika*	> Germ. N-*lich*, Engl. N/ADJ-*ly*
Latin	(A) *mente*	> Romance A-*mente*

How do we get from optional to obligatory?

Skt. **(NP)** ***madhye*** > Hindi **NP** ***mẽ***

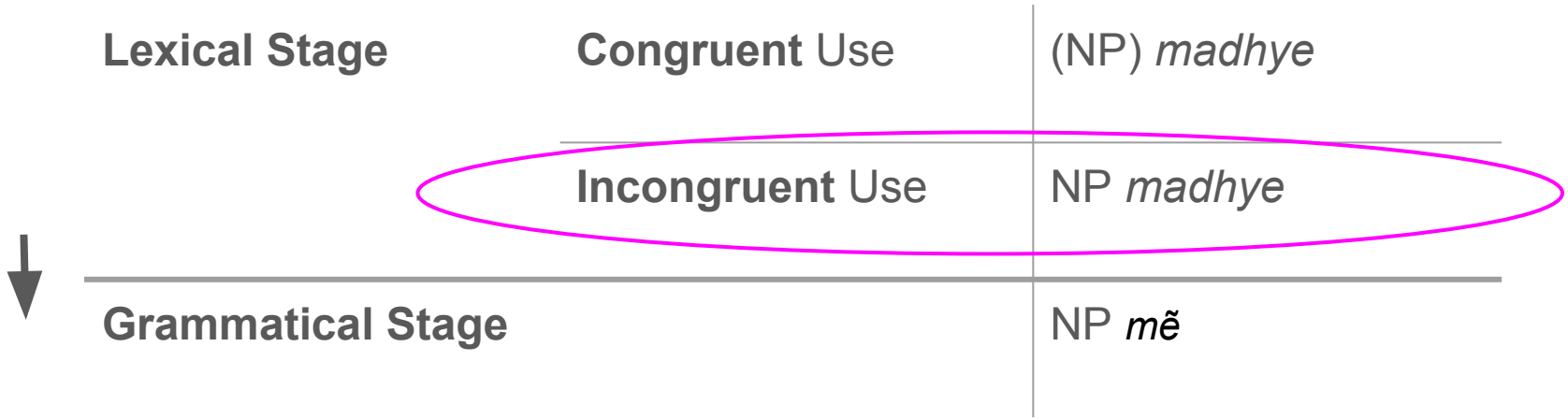
‘In the middle (of X)’ > ‘in X’

Reinöhl, Uta. 2016. *Grammaticalization and the Rise of Configurationality in Indo-Aryan*. Oxford: Oxford University Press.

Lexical Stage	(NP) *madhye*
Grammatical Stage	NP *mẽ*

Lexical Stage	**Congruent** Use	(NP) *madhye*
Grammatical Stage		NP *mẽ*

Lexical Stage	**Congruent** Use	(NP) *madhye*
	Incongruent Use	NP *madhye*
Grammatical Stage		NP *mẽ*


Lexical Stage
Congruent Use
(NP) madhye
Incongruent Use
NP madhye
Grammatical Stage
NP mẽ

Lexical Stage: **Congruent** Use

overt referent!

(1) Vedic Sanskrit

mádhye	***hradásya***	*plavasva*	*vigŕ̥hya*	*catúraḥ*	*padáḥ*
MADHYE	lake.GEN.SG.M	swim.IMP.2SG	spread.CONV	four.ACC.M	foot.ACC.PL.M

‘Swim **in the middle of the lake**, spreading (your) four feet!’ (AV 4.15.14)

Lexical Stage: **Congruent** Use

overt referent!

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‘Swim **in the middle of the lake**, spreading (your) four feet!’ (AV 4.15.14)

covert referent!

(2) Vedic Sanskrit

atha	***madhya***	*āghārayati*
now	MADHYE	pour.3SG

‘Now, (he) pours (ghee) **onto the middle** (of the altar, i.e. as opposed to its corners).’ (ŚaB 3.5.2.13)

Lexical Stage: **Incongruent** use

(3) Apabhramsha (Late Middle Indo-Aryan)

dharivi	*ihu*	***majjhi***	***hiyayaha***
carry.CONV	DEM.ACC.SG	MADHYE	heart.GEN.SG

‘he carried **in the middle of his heart** this: (‘I will…‘)‘ (SA 707.4)

Lexical Stage: **Incongruent** use

***only* overt** referent!

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Incongruent uses are ***only*** found with **overt possessors**.

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Incongruent uses are ***only*** found with **overt possessors**.

… **No matter how "salient" or "activated" the possessor!**

(4) Apabhramsha (Late Middle Indo-Aryan)

tahiṃ	*jāivi*	*ṭiṇṭahiṃ*	*gau*	*turantu /*
DEM.LOC.SG	go.CONV	gambling-house.LOC.SG	go.PPP.NOM.SG.M	in_haste

jūvārahaṃ	*sayalahaṃ*	*maṇu*	*harantu /*
gambler.GEN.PL	all.GEN.PL	mind.ACC.SG	grab.PPA.NOM.SG.M

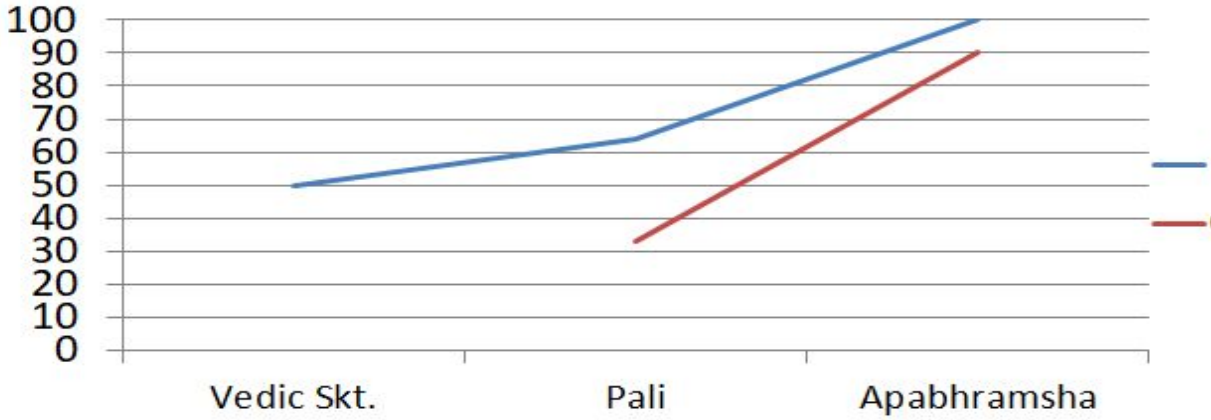
tahaṃ	***majjhi***	*ṇiviṭṭhau*	*so*	*sahei /*
DEM.GEN.PL	madhye	settle_down.PPP.NOM.SG.M	DEM.NOM.SG.M	shine.3SG

chaṇaindaho	*līlā*	*ṇam*	*vahei*
full_moon.GEN.SG	beauty.ACC.SG	so	bear.3SG

‘Reaching there, (the king) quickly went to the gambling house attracting the mind of all the **gamblers**. Sitting in **their middle** he shines as if bearing the beauty of the full moon.’ (KA 8.15.3, cp. Jain)

increase in incongruent uses >

increase in overt possessors



(absolute figures: *madhye* 70/140, 64/100, 35/35, *upari* 10/31, 39/43)

Grammaticalized stage

(5) Hindi

hamāre	*ghar*	*ke*	*pās*	*nadī*	*hai*.
POSS1PL.OBL.SG.M	house.OBL.SG	near		river.DIR.SG.F	be.3SG

us l*Ø	***mẽ***	*tairnā*	*acchā*	*lagtā*	*hai.*
DEM.OBL.SG	in	swim.INF.DIR	good.DIR.SG.M	strike.IPFV.SG.M	be.3SG

‘There is a river near our house; it’s nice to swim **in it.**’

Grammaticalized stage

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‘There is a river near our house; it’s nice to swim **in it.**’

Obligatory dependent even in basic spatial usages.

Lexical Stage	**Congruent** Use	(NP) *madhye*
	Incongruent Use	NP *madhye*
Grammatical Stage		NP *mẽ*

More grammaticalization pathways & more examples per pathway

N (+ N) > ADP + N	Skt. (NP +) *madhye* ‘in the middle (of X)’ > Hindi NP *mẽ* ‘in X’ Engl. *at the foot* (of X) > *at the foot of* X
ADV (+ N) > ADP + N	Homeric Greek ἐν (NP) > ἐν NP
DEM (+ N) > ART + N	OldE *se* (NP) > *the* NP

ADV (+ NP) > ADP + NP

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Ex.: PIE spatial adverbs > modern adpositions (e.g. Engl. *in*, *on*, French *à*, *de* etc.)

ADV (+ NP) > ADP + NP

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Lexical Stage: **Congruent** use

(6)

(ópseai …)	*nêas*	*emás,*	***en***	*d'ándras*	*eressémenai*
see.FUT.2SG	ship.ACC.PL.F	POSS	inside	PART man.ACC.PL.M	row.INF

memaôtas
think.PTCP.ACC.PL.M

"(you shall see) my ships, and **inside**, men eager to row" (Il. 9.361, Bortone 2010: 134)

(7)

Argeîoi d’ ***en nēusì*** *phílēn es patríd’ ébēsan*
Argives PTC in ship:DAT.PL.F their:ACC.F to homeland:ACC.F go:AOR.3PL
‘The Argives had gone back **in their ships** to their native land’ (Il. 12.16, Luraghi 2003: 83)

Lexical Stage: **Incongruent** use

(8)

en	***doiêi***	*dè*	*saōsémen*	*è*	*apolésthai*
in	doubt:DAT.F	PTC	save:INF.FUT	PTC	perish:INF.AOR.MID

‘it is **in doubt** whether we will save (the ships) or they are lost’ (Il. 9.230, Luraghi 2003: 88)

DEM (+N) > ART N

Himmelmann, Nikolaus P. 1997. *Deiktikon, Artikel, Nominalphrase. Zur Emergenz syntaktischer Struktur.* Tübingen: Niemeyer.

DEM (+N) > ART N

Lexical Stage: **Congruent use**

(8)

*... nihil vocis causa facere, non **illam** per gradus paulatim ab imo ad summum perducere…*
'... without doing anything for the sake of his voice—such as gradually taking **it** up from low to high' (Sen. *Con*. 1.*pr*. 16; from Pinkster 2015: 1147)

(9)

*Lucca castrum dirigunt, atque funditus subvertunt, custodes **illius castri** capiunt*
They go to the fort of Loches, they raze it to the ground and take prisoner the guardians of **that fort**.
(Continuations § 25, Carlier & de Mulder 2010: 6)

Lexical Stage: **Incongruent uses**

(11) **anamnestic (“recognitional”) use**

Hic sunt carctas de illo thellenio ***de illo mercatho****.*
‘Here are the customs papers from **that market**.’ (Merowingian, St. Denis; cp. Selig 1992, Himmelmann 1997: 96)

Specific semantics condition obligatory dependencies at every synchronic stage of every language.

But only rarely do they develop into a syntactic configuration.

Example: Engl. *middle*

Congruent use

(9)

*Yes that's my father **in the middle**. That's right. So he's the central one.* (BNC, K65, S_interview_oral_history)

(10)

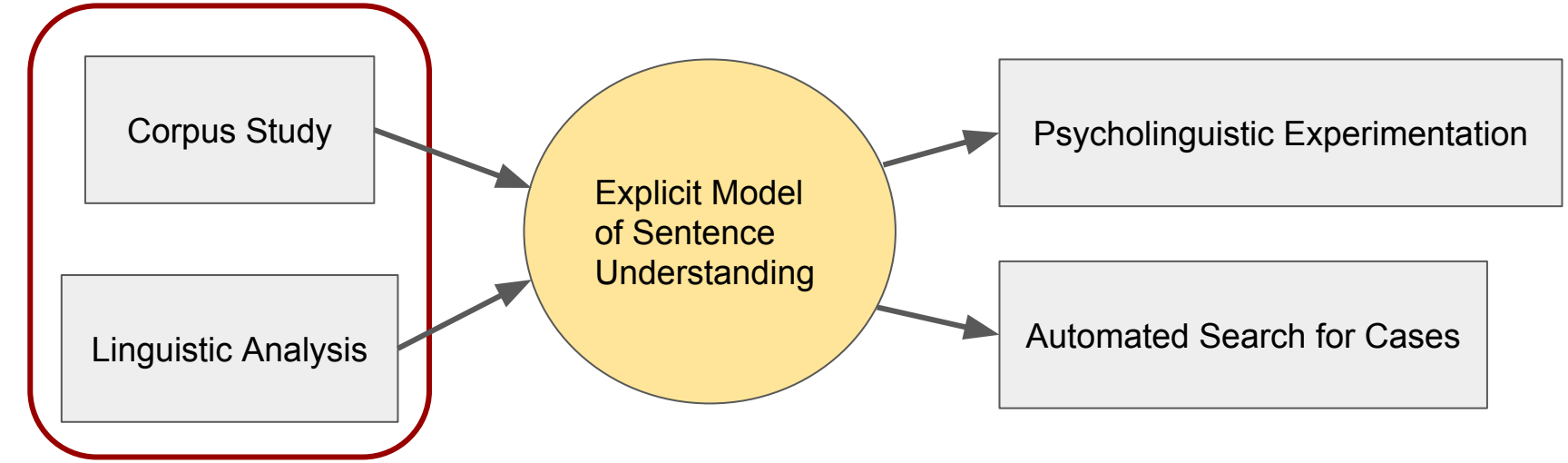
*On the shores of the lake, or on one of the little islets that may form **in the middle of it**, they build their lodge.* (BNC, F9F, W_non_ac_nat_science)

Incongruent use

(11)

*If there is trouble it seems Jones is inevitably **in the middle of it*** (BNC, CEP, W_newsp_other_sports)

Modelling

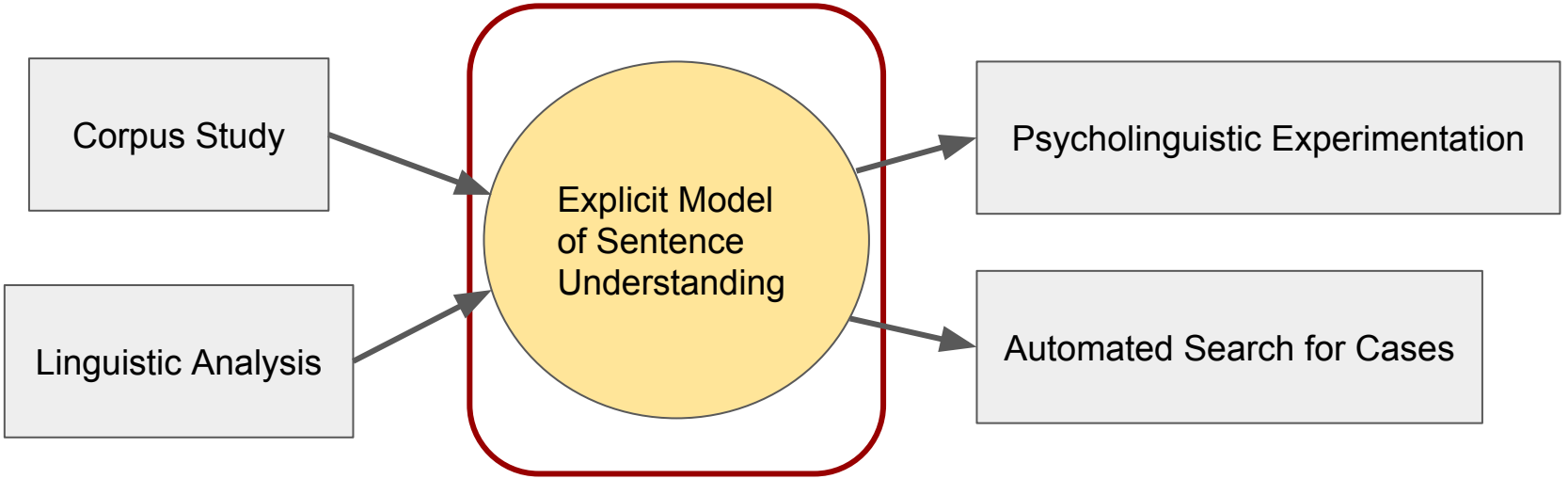


Discovery of the phenomena

Explanatory Model

Testing scope of phenomena

Modelling



Discovery of the phenomena

Explanatory Model

Testing scope of phenomena

An Explicit Model of Obligatorification

We propose:

- a generic labelled-graph model of semantics (Sowa 2014), able to capture the semantics of words, sentences and world knowledge (RDF/N3)
- incremental interpretation by unification and inference (Bouma 1988)
- selecting most salient match (borrowing from Budiu & Anderson, 2004)

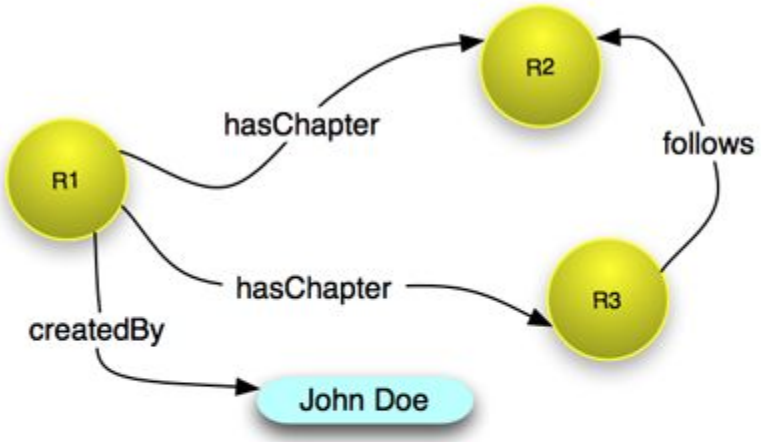
An Explicit Model of Obligatorification

Having a model like this:

- requires and makes an explicit definition of congruency and incongruency in terms of semantic representations, and their compatibility
  - we construct default implications of terms from dictionary definitions

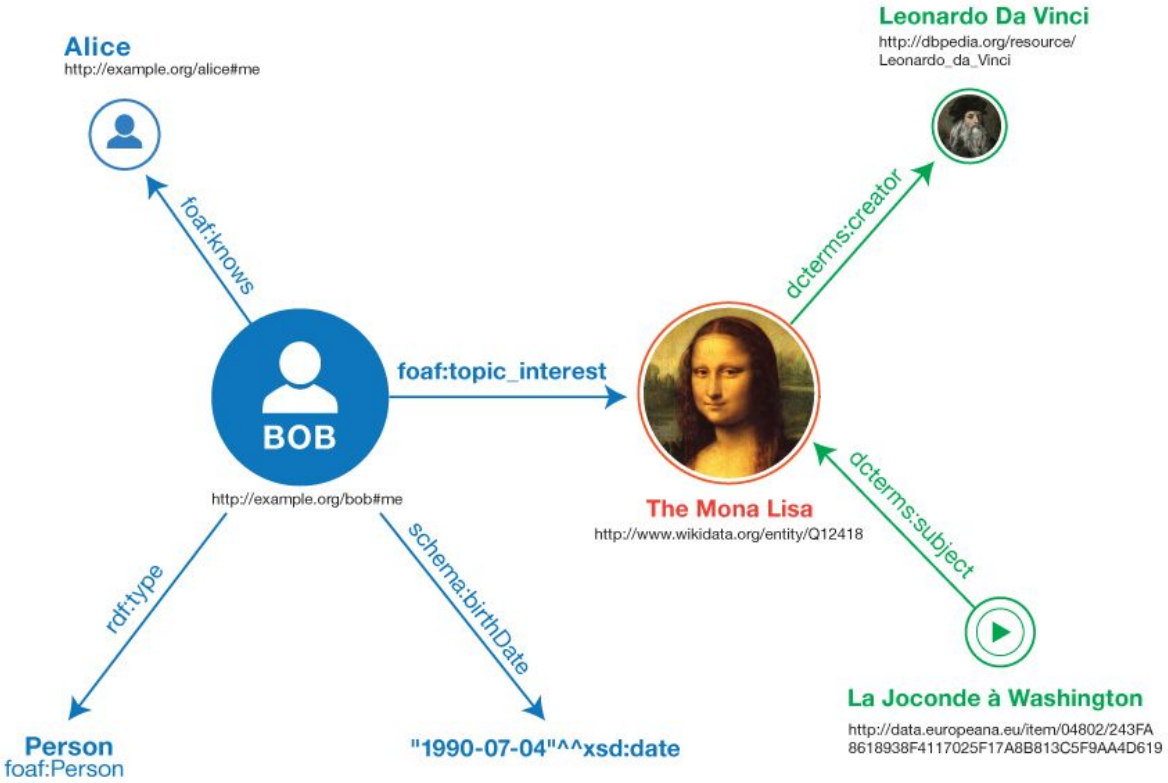
- formalises our hypothesis about why incongruency leads to obligatory use of overt dependents

Representing Semantics



Subject	Predicate	Object
R1	hasChapter	R2
R1	hasChapter	R3
R3	follows	R2
R1	createdBy	"John Doe"

Representing Semantics



Unification

unification is combining two graphs - with as much overlap as makes sense

there may be many possible combinations

it is always possible to combine graphs without overlap

sentence processing proceeds by repeatedly **unifying** the semantics of lexemes in the input with background information

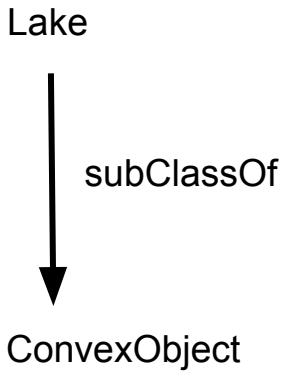
- to identify the entities being mentioned
- to build a representation of the meaning of the whole utterance

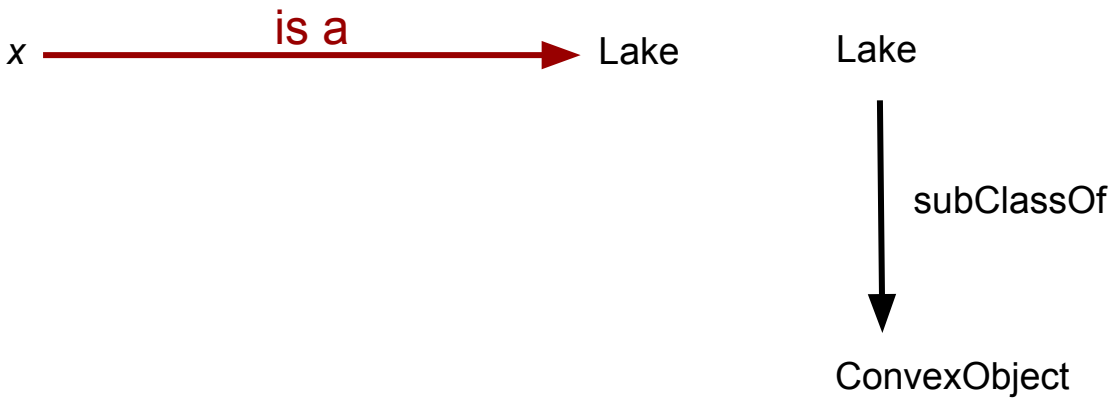
language input

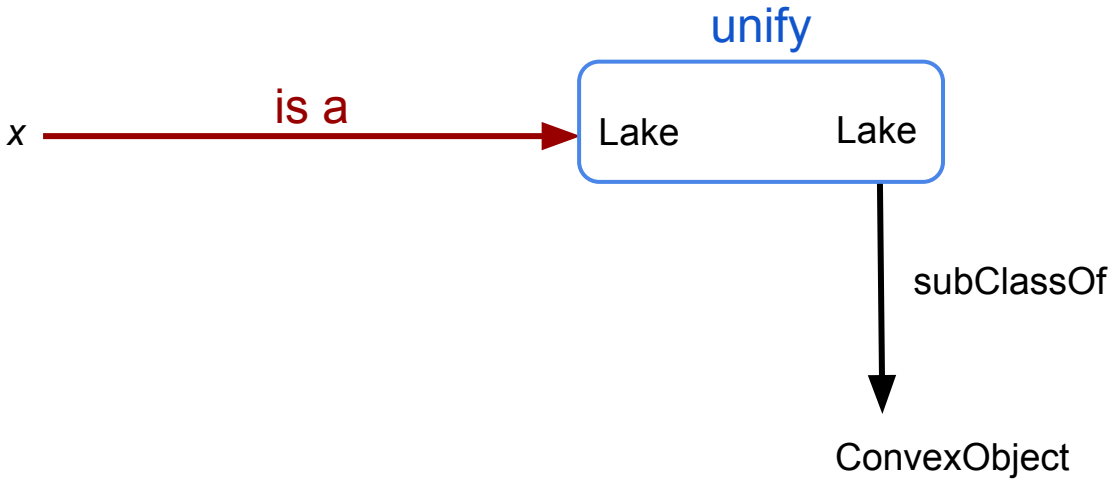
*There is a **lake** ...*

world knowledge

A LAKE IS A CONVEX OBJECT ...




x
is a
Lake
Lake
subClassOf
ConvexObject


unify
x
is a
Lake
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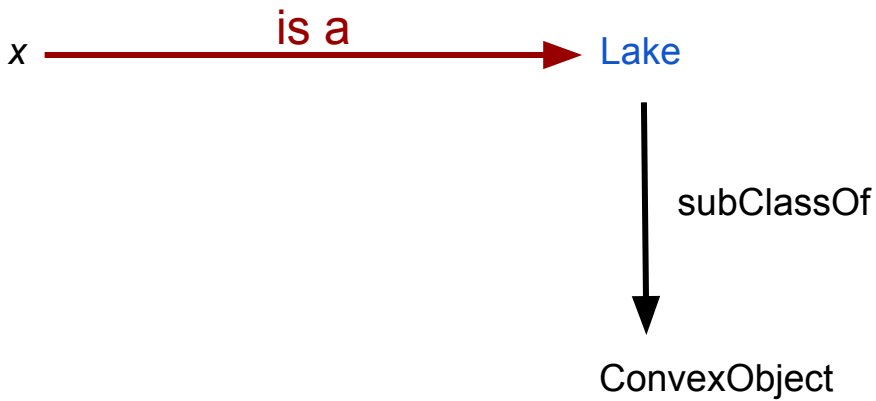
ConvexObject

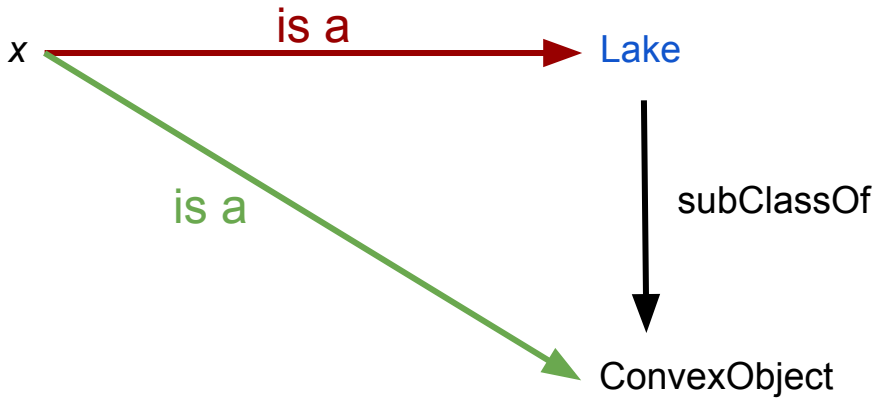
unification

*There is a **lake** ...*



inference

*There is a **lake** ...*



language input

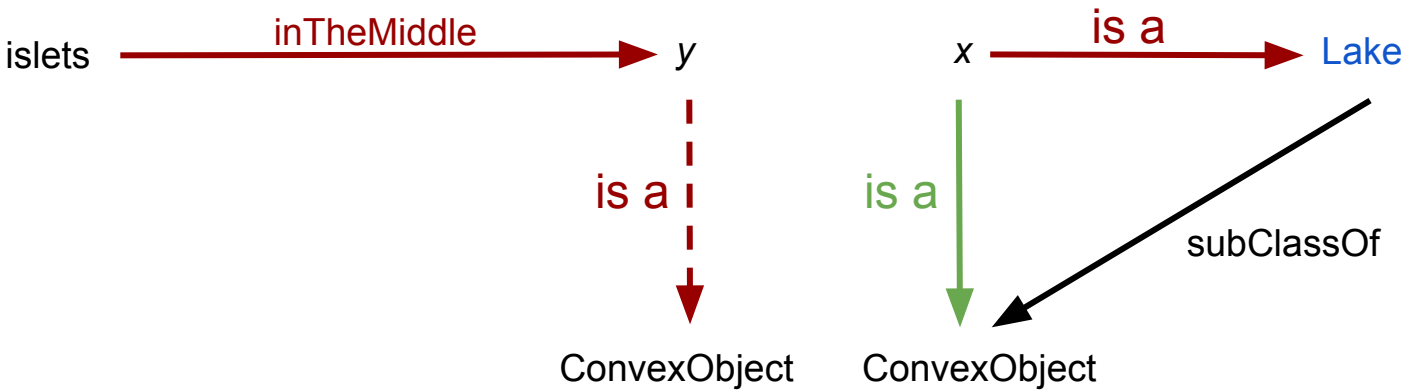
*.. with **islets in the middle.***

this is the default pattern for the dependent for inTheMiddle. If a dependent is supplied, it replaces this pattern

language input

*There is a **lake** ...*

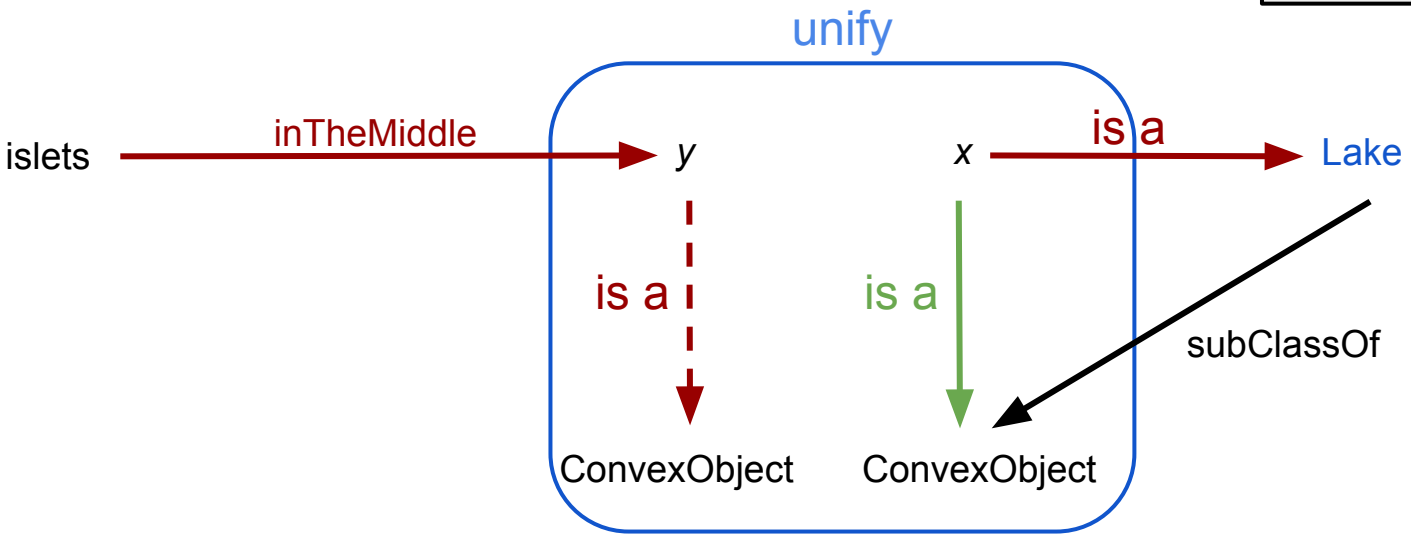
*.. with islets **in the middle.***



language input

*There is a **lake** ...*

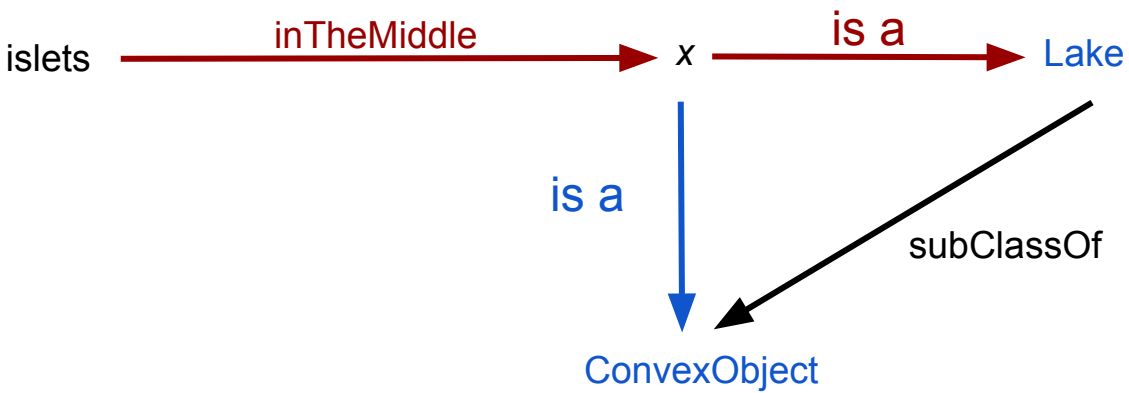
*.. with islets **in the middle.***



unification

*There is a **lake** ...*

*.. with **islets in the middle.***

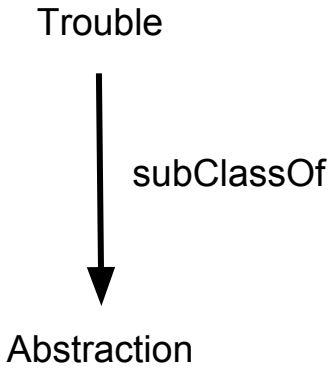


language input

*If there is **trouble** ...*

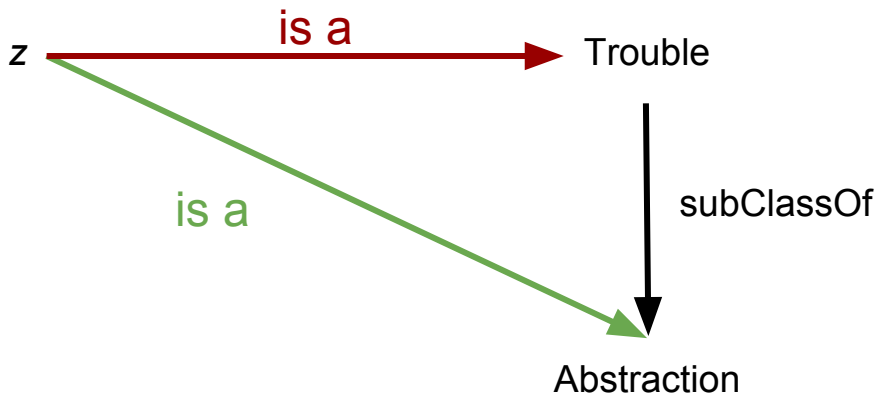
world knowledge

TROUBLE IS AN ABSTRACTION ...



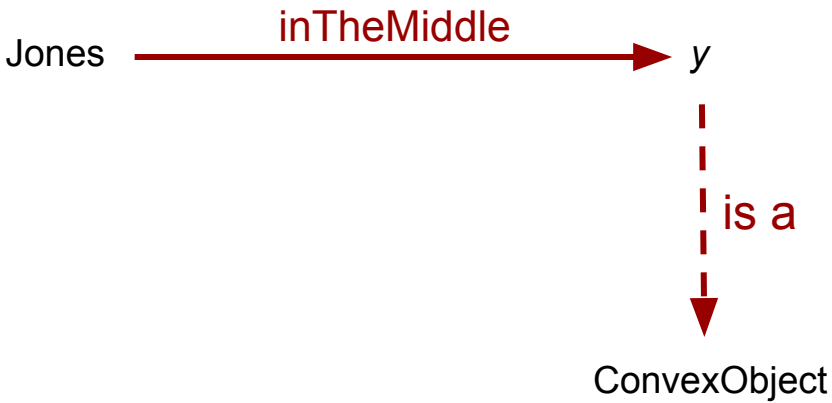
inference

TROUBLE IS AN ABSTRACTION ...



language input

*then Jones is **in the middle.***

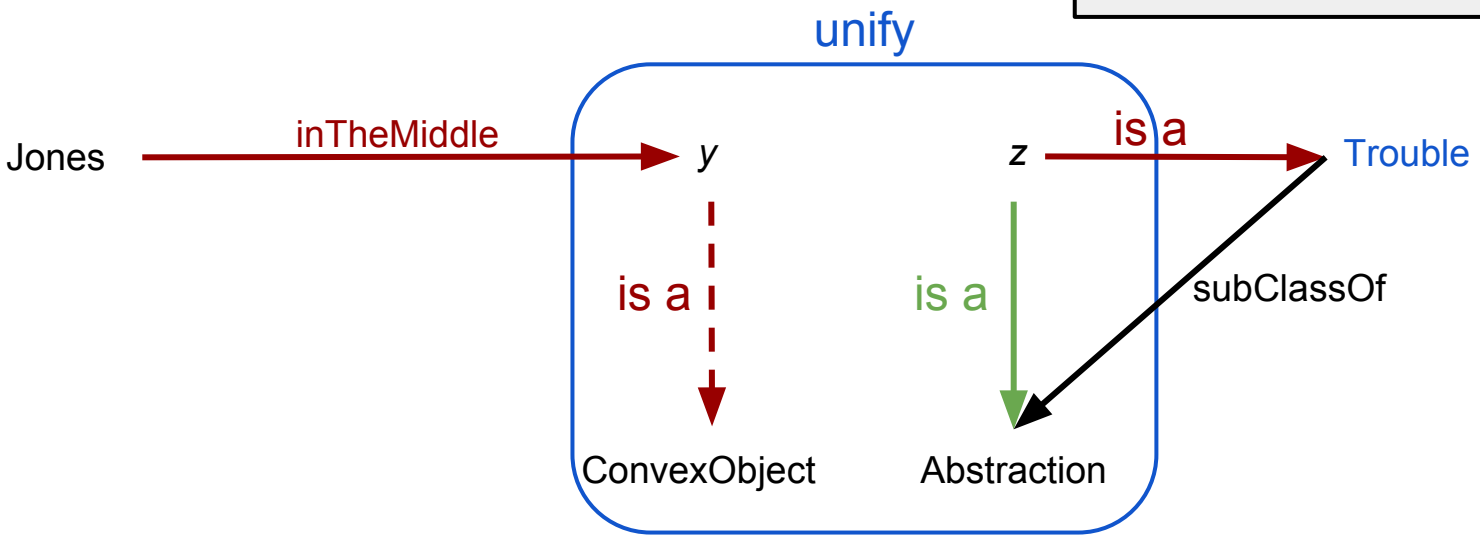


this is the default pattern for the dependent for inTheMiddle. If a dependent is supplied, it replaces this pattern

unification

*If there is **trouble** ...*

*then Jones is **in the middle.***

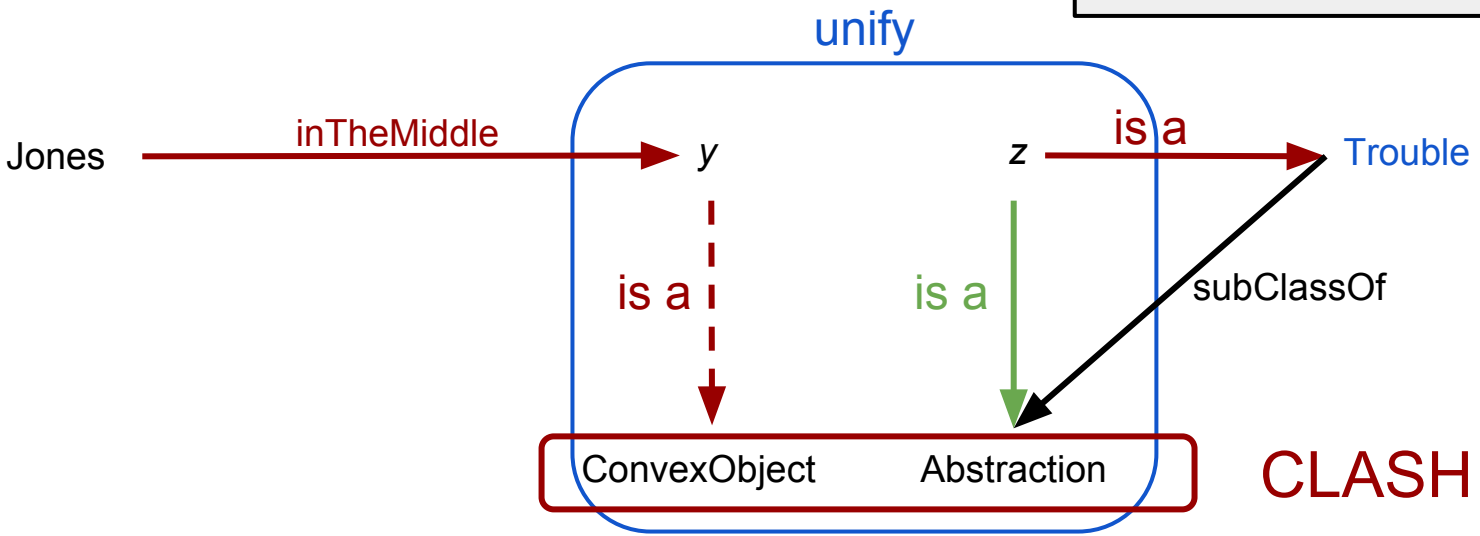


Failed Unification

unification

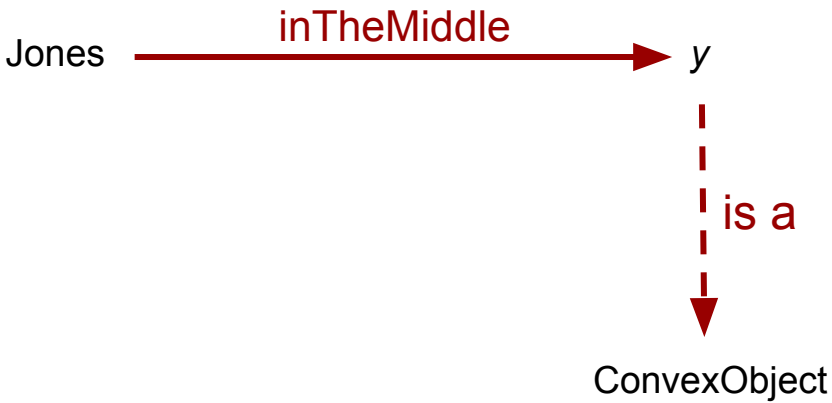
*If there is **trouble** ...*

*then Jones is **in the middle.***



language input

then ***Jones is in the middle <u>of it</u>***

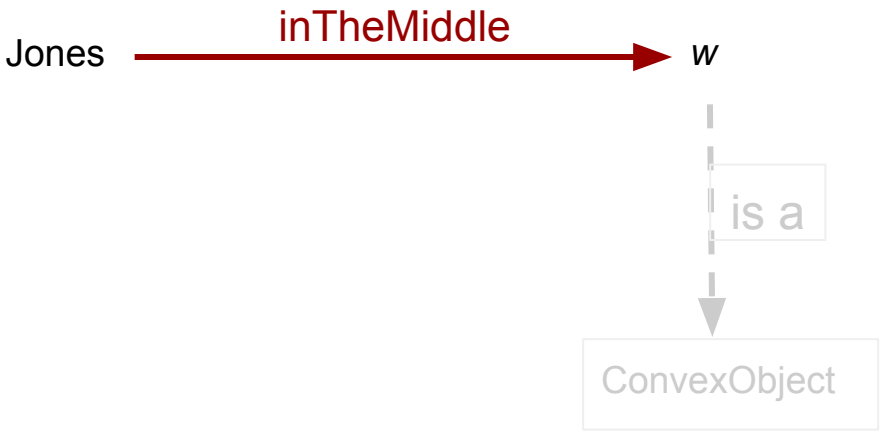


w

semantics for *it* is just a variable which unifies back anaphorically

language input

then ***Jones is in the middle*** ***<u>of it</u>***

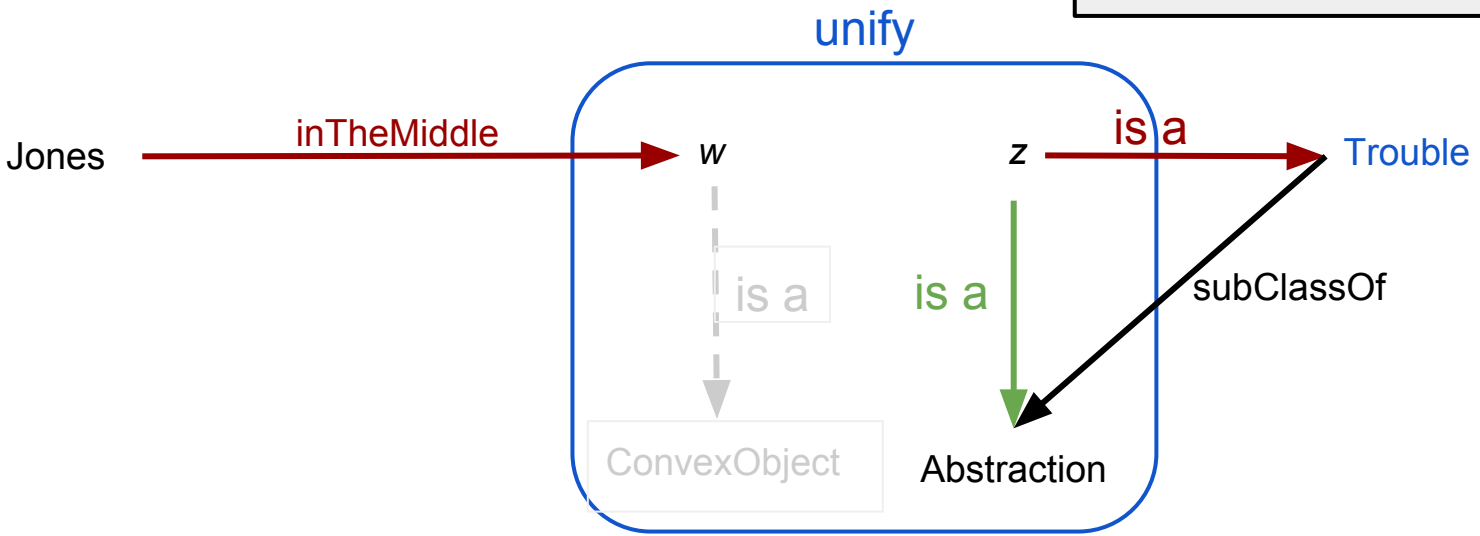


when a dependent is supplied, its semantics replaces the default

unification

*If there is **trouble** ...*

*then Jones is **in the middle of it.***

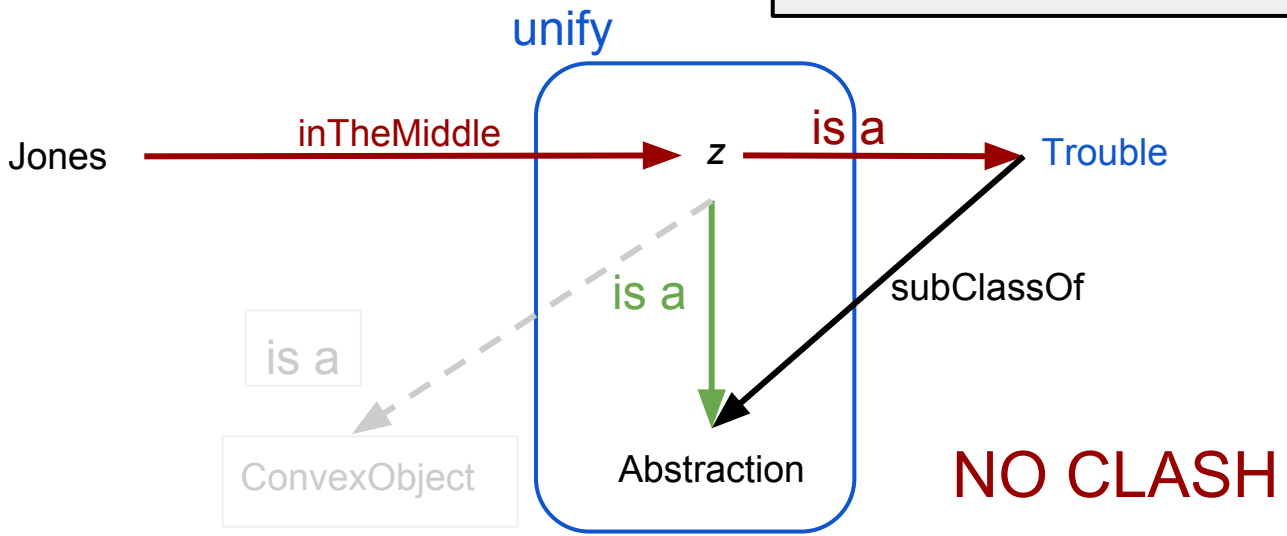


Combined Semantics

unification

*If there is **trouble** ...*

*then Jones is **in the middle of it.***



Combined Semantics

unification

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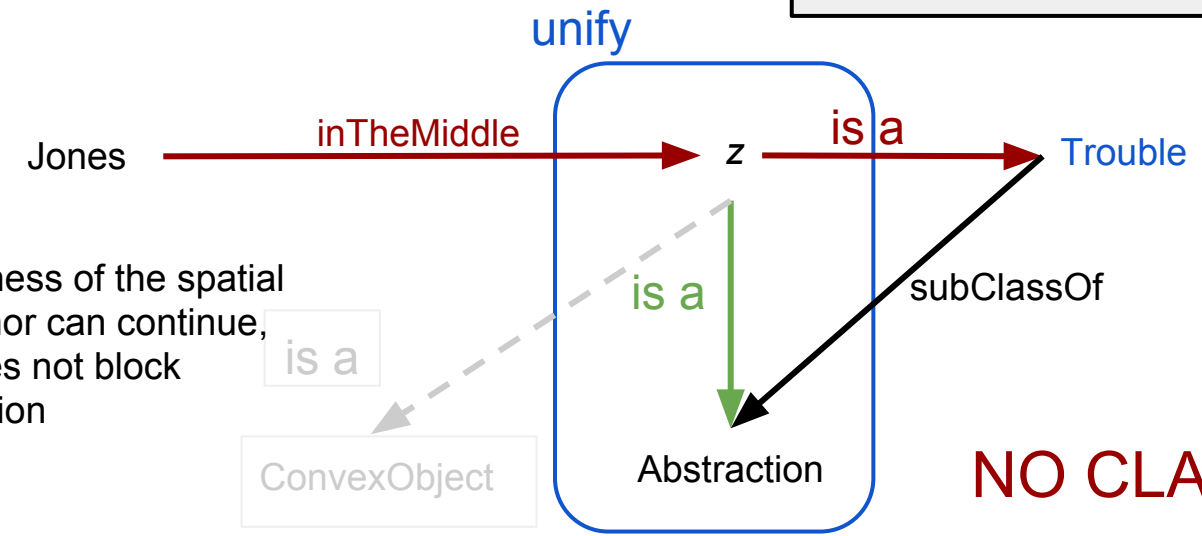

Awareness of the spatial metaphor can continue, but does not block unification

Obligatoriness

Obligatoriness in this model happens because only by preempting the default assumptions of a term can it be successfully unified with the correct semantics

the relation and its dependent need to be preprocessed together to create a form which can unify with the main sentence semantics

Conclusions

Specific semantics condition obligatory dependencies at every synchronic stage of every language.

Only rarely does it become a syntactic constraint.

Obligatorification is not tied to grammaticalization.

Semantic networks model why congruent and incongruent uses imply optional vs obligatory dependencies.

Thank you for