

# Obligatorification in Syntax

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# Examples for obligatorification

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

How do we get from optional to obligatory?

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

'In the middle (of X)' > 'in X'

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

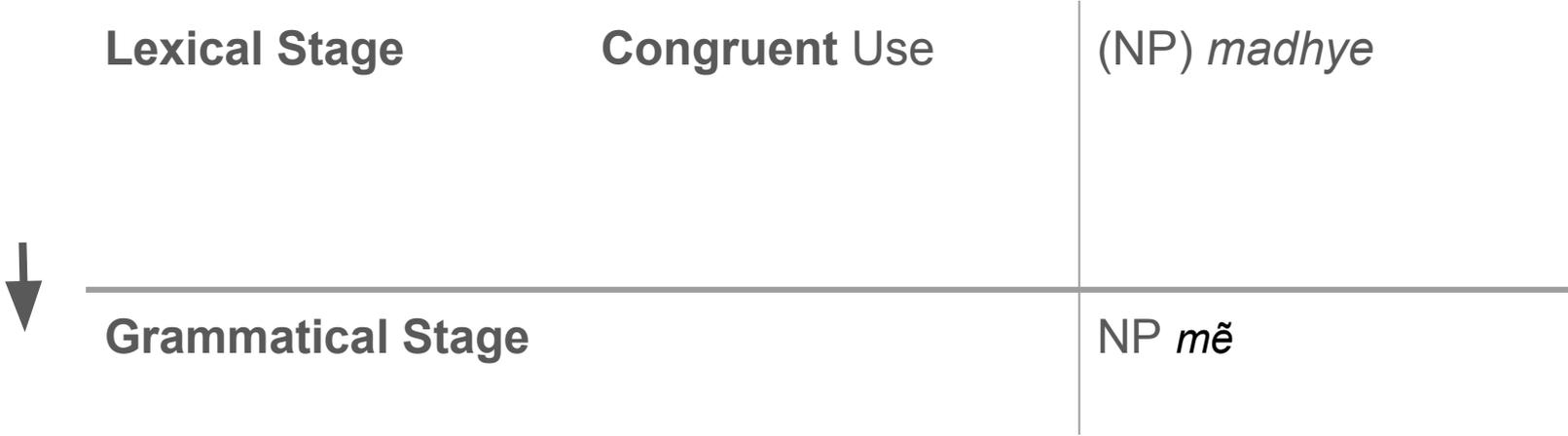
**Lexical Stage**

(NP) *madhye*



**Grammatical Stage**

NP *mě*





|                          |                        |                    |
|--------------------------|------------------------|--------------------|
| <b>Lexical Stage</b>     | <b>Congruent Use</b>   | (NP) <i>madhye</i> |
|                          | <b>Incongruent Use</b> | NP <i>madhye</i>   |
| <b>Grammatical Stage</b> |                        | NP <i>mě</i>       |

|                          |                        |                    |
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# Lexical Stage: Congruent Use

**overt referent!**

(1) Vedic Sanskrit

*madhya etasyai*

*nividaḥ*

*sūktam*

*śamset*

MADHYE

DEM.DAT.SG.F

invocation.GEN.SG.F

hymn.ACC.SG.N

recite.OPT.3SG

‘he should recite the hymn **in the middle of that invocation**’ (AIB 2.33.2)

# Lexical Stage: Congruent Use

**overt** referent!

(1) Vedic Sanskrit

*madhya etasyai nividaḥ sūktam śamset*  
MADHYE DEM.DAT.SG.F invocation.GEN.SG.F hymn.ACC.SG.N recite.OPT.3SG

‘he should recite the hymn **in the middle of that invocation**’ (AīB 2.33.2)

(2) Vedic Sanskrit

**covert** referent!

*madhye nividam dadhāti*  
MADHYE invocation.ACC.SG.F put.3SG

‘he placed an invocation **into the middle** (of the recitation)’ (AīB 3.19)

# Lexical Stage: **Incongruent** use

(3) Apabhramsha (Late Middle Indo-Aryan)

|                |            |                      |                        |
|----------------|------------|----------------------|------------------------|
| <i>dharivi</i> | <i>ihu</i> | <b><i>majjhi</i></b> | <b><i>hiyayaha</i></b> |
| 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

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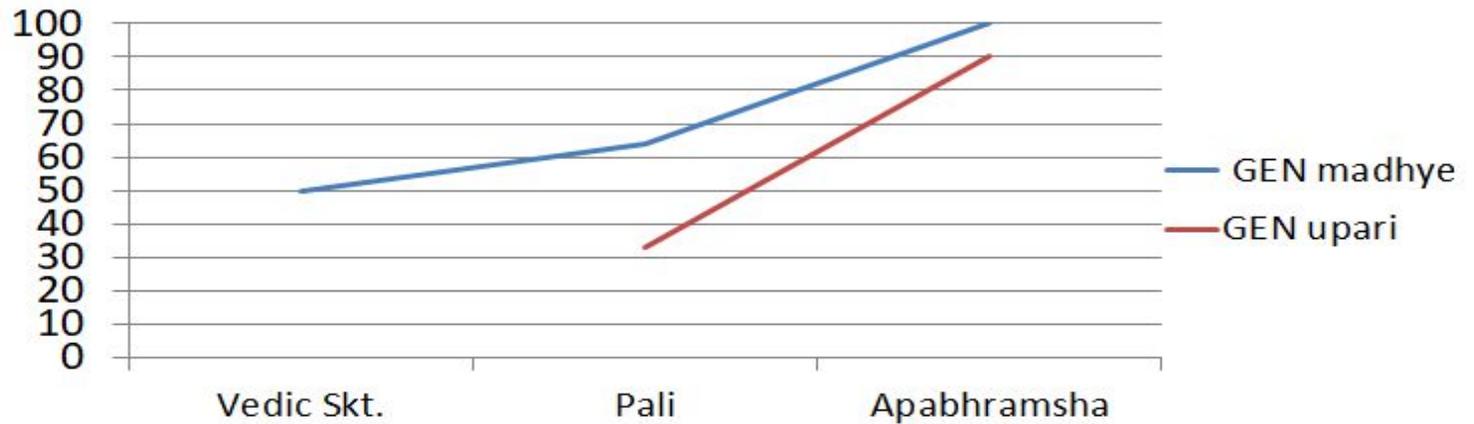
**only overt  
referent!**

*All 93 attestations* **without an overt possessor** involve **congruent usages**.

All 93 attestations **without an overt possessor** involve **congruent usages**.

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

increase in incongruent uses >  
increase in overt possessors



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

# Grammaticalized stage

## (4) Hindi

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

*us /\*∅*                    *mē* *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

### (4) Hindi

|                           |              |               |               |                  |             |
|---------------------------|--------------|---------------|---------------|------------------|-------------|
| <i>hamāre</i>             | <i>ghar</i>  | <i>ke</i>     | <i>pās</i>    | <i>nadī</i>      | <i>hai.</i> |
| POSS1PL.OBL.SG.M          | house.OBL.SG | near          |               | river.DIR.SG.F   | be.3SG      |
| <i>us</i> / * $\emptyset$ | <i>mē</i>    | <i>tairnā</i> | <i>acchā</i>  | <i>lagtā</i>     | <i>hai.</i> |
| 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.**’

Obligatory dependent even in basic spatial usages.



|                          |                        |                     |
|--------------------------|------------------------|---------------------|
| <b>Lexical Stage</b>     | <b>Congruent Use</b>   | (NP ) <i>madhye</i> |
|                          | <b>Incongruent Use</b> | NP <i>madhye</i>    |
| <b>Grammatical Stage</b> |                        | NP <i>mě</i>        |

# More grammaticalization pathways

|                               |   |
|-------------------------------|---|
| <b>N (+ N) &gt; ADP + N</b>   | Skt. (NP +) <i>madhye</i> 'in the middle (of X)' > Hindi NP <i>mē</i> 'in X'<br>Engl. <i>at the foot</i> (of X) > <i>at the foot of X</i> |
| <b>ADV (+ N) &gt; ADP + N</b> | Homeric Greek <i>ἐν</i> (NP) > <i>ἐν</i> NP   |
| <b>DEM (+ N) &gt; ART + N</b> | OldE <i>se</i> (NP) > <i>the</i> NP   |

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| <b>DEM (+ N) &gt; ART + N</b> | OldE <i>se</i> (NP) > <i>the</i> NP   |

These are just examples.

The obligatorification scenario is hypothesized to **apply to *all* instances of these pathways.**

ADV (+ NP) > ADP + NP

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

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Lexical Stage: **Congruent** use

(5)

|                     |               |              |                  |                   |                    |
|---------------------|---------------|--------------|------------------|-------------------|--------------------|
| <i>(ópseai ...)</i> | <i>néas</i>   | <i>emás,</i> | <b><i>en</i></b> | <i>d'ándras</i>   | <i>eressémenai</i> |
| 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)

(6)

*Argeîoi d' en nēusi 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

(7)

*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

Himmelman, 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 castris** 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 use**

*Hic sunt carctas de illo thellenio **de illo mercatho.***

'Here are the customs papers from **that market.**' (Merovingian, St. Denis; cp. Selig 1992, Himmelmann 1997: 96)

Specific semantics and/or pragmatics  
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

(12)

*Yes that's my father **in the middle**. That's right. So he's the central one.* (BNC, K65, S\_interview\_oral\_history )

(13)

*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

(14)

*If there is trouble it seems Jones is inevitably **in the middle of it*** (BNC, CEP, W\_newsp\_other\_sports)

# Modelling

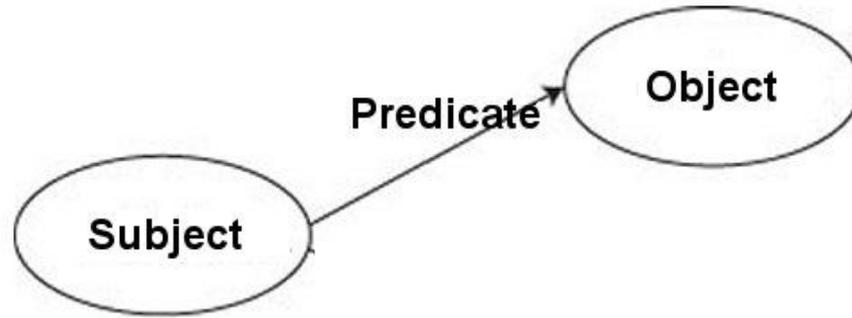
(after case studies)

- graphical representations of semantics (triples, semantic web graphs, ontologies)
- unification-based models of incremental interpretation (?)
- congruent and incongruent cases
- why the dependent is obligatory in incongruent cases
- running through one or more cases in the model

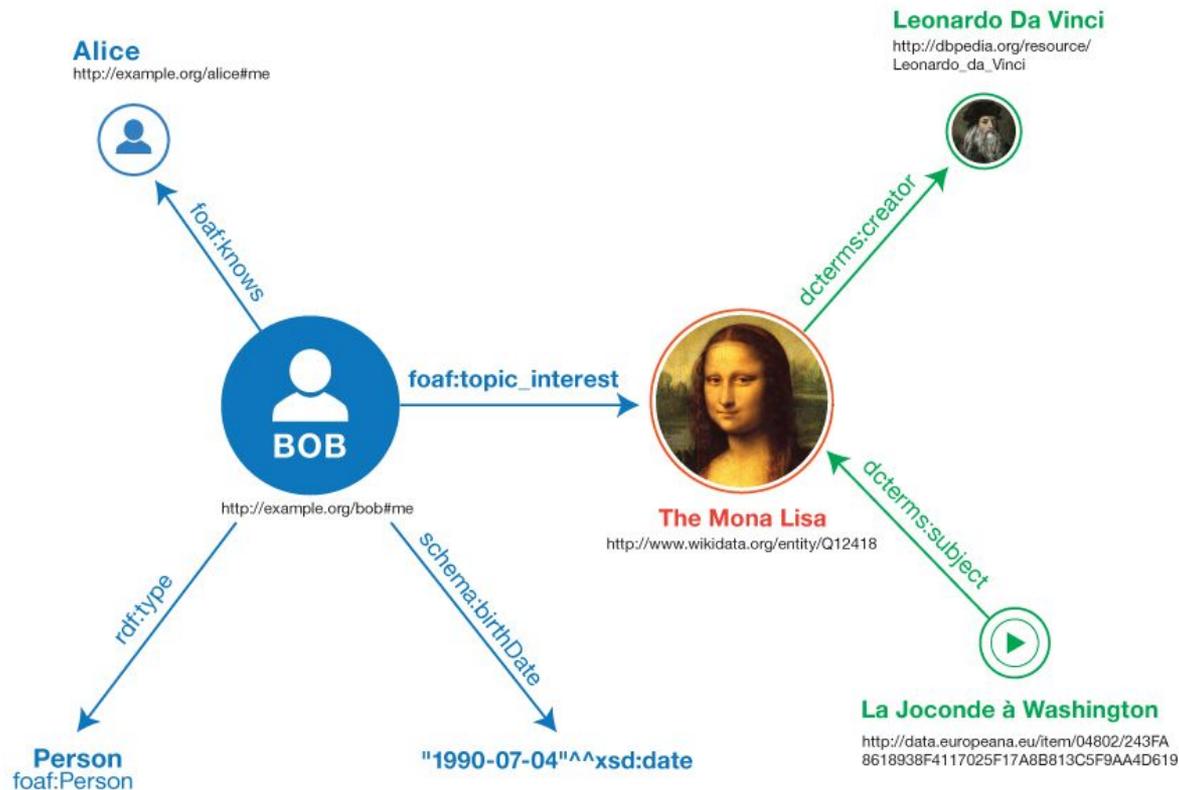
# What should our model provide?

- a model of phrase interpretation in the absence of incongruencies
- a distinction between congruent and incongruent cases
- a solution for processing incongruent cases
- salient dependency filling
  - maximally salient items volunteer as arguments, if none given
  - incongruent constructions block salient items from matching
- account for obligatoriness of incongruent dependents
  - incongruent dependents matched when present

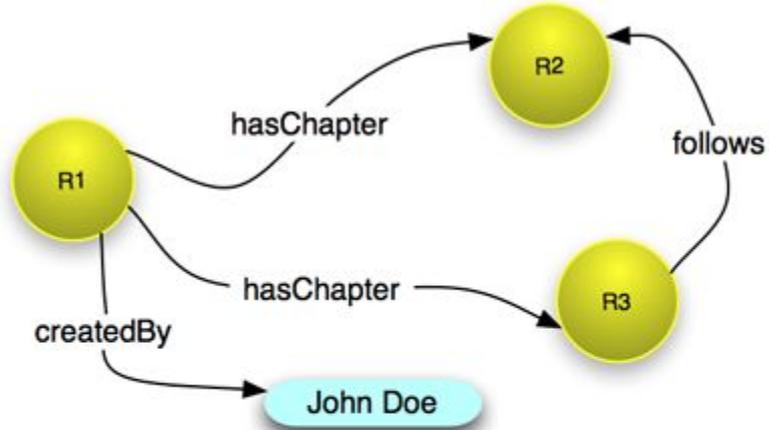
# Representing Composable Semantics



# Representing Semantics



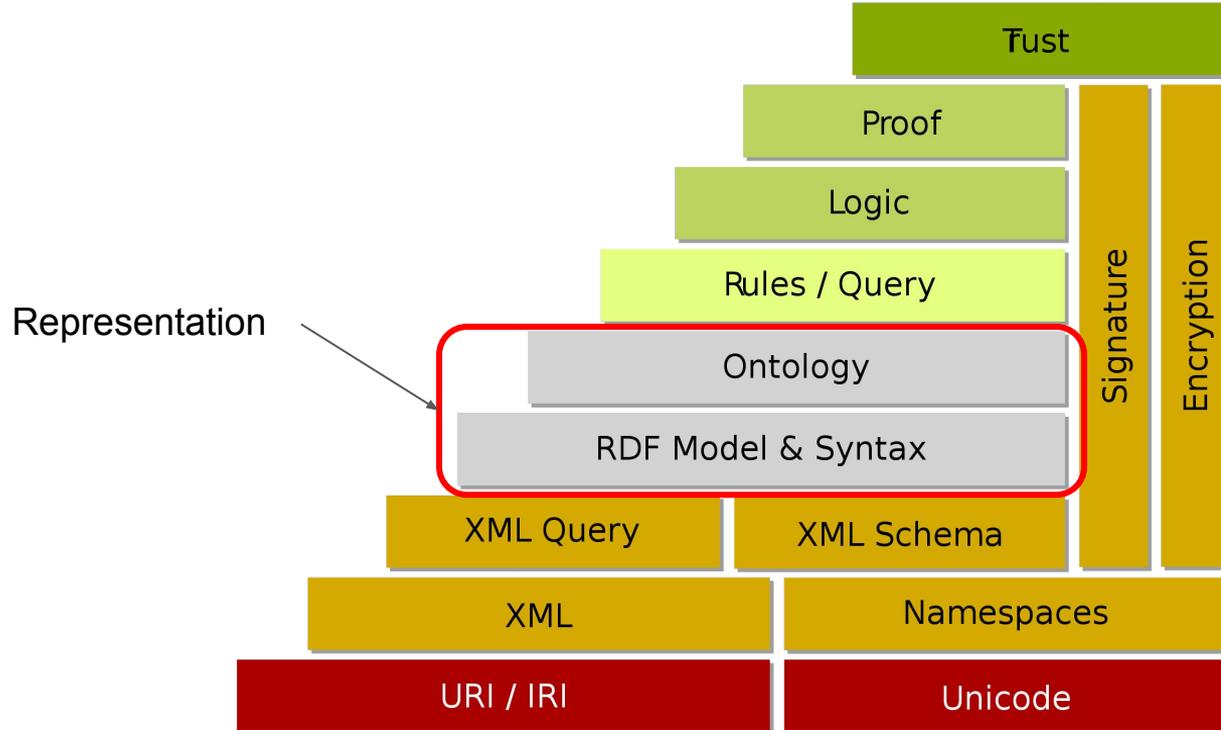
# Representing Semantics



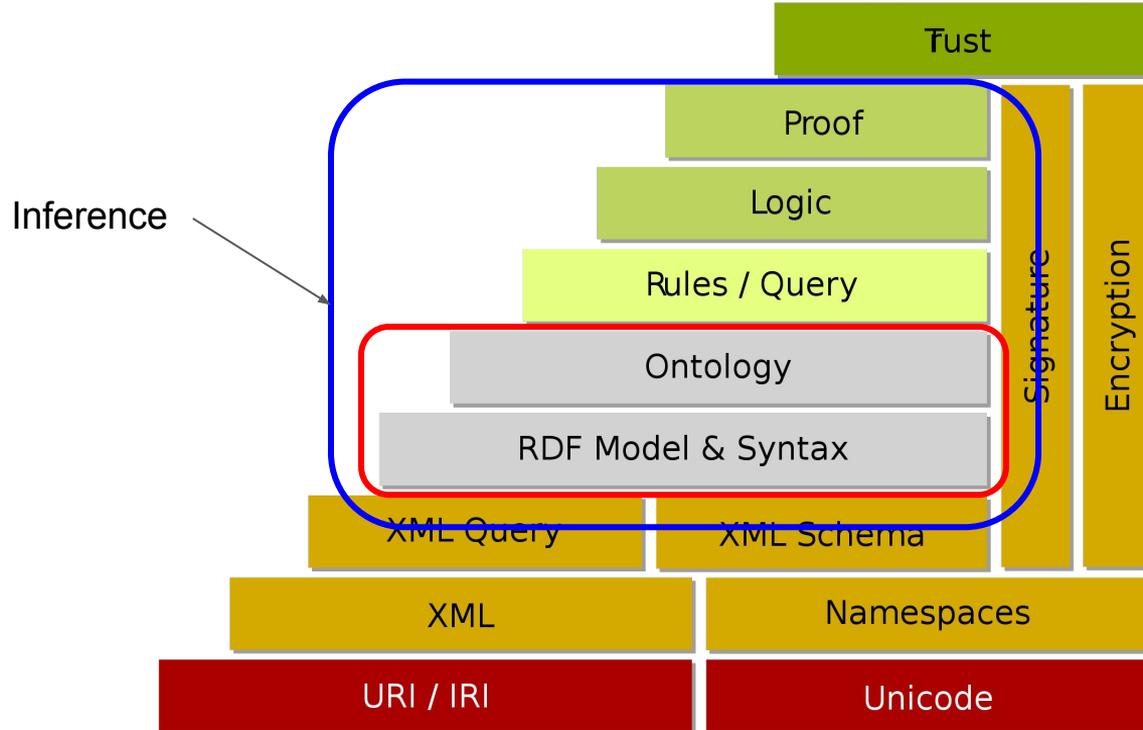
| Subject | Predicate  | Object     |
|---------|------------|------------|
| R1      | hasChapter | R2         |
| R1      | hasChapter | R3         |
| R3      | follows    | R2         |
| R1      | createdBy  | "John Doe" |



# Doing Things with Semantics

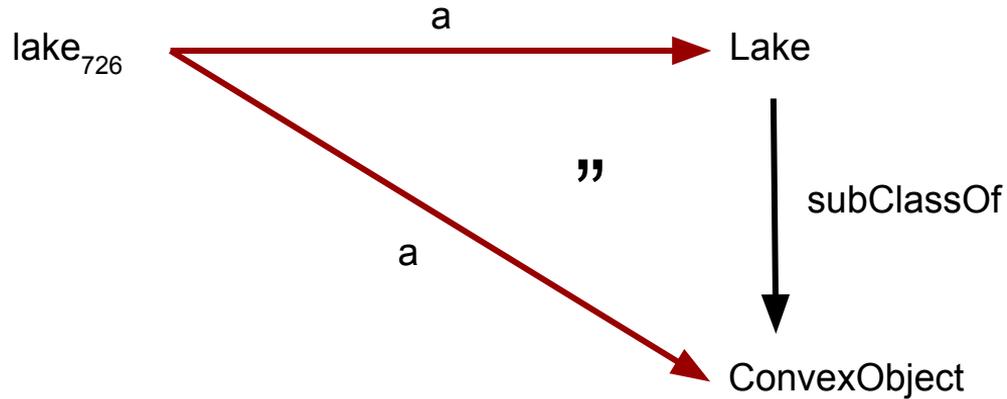


# Doing Things with Semantics



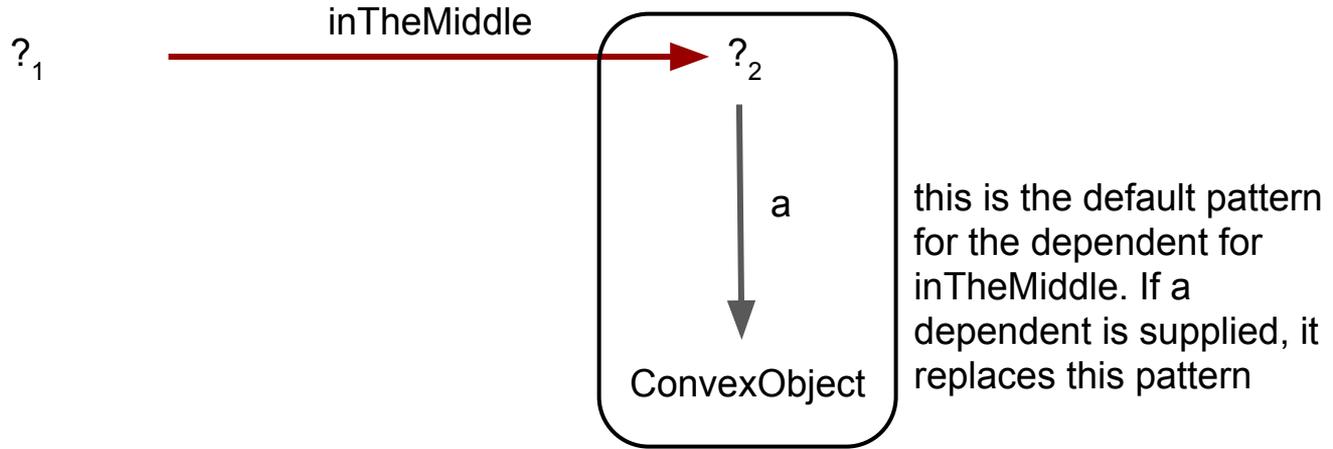
# Representing Lexical Meanings

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



# Representing Lexical Meanings

*.. with islets in the middle.*



# Unification

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

there may be many possible combinations

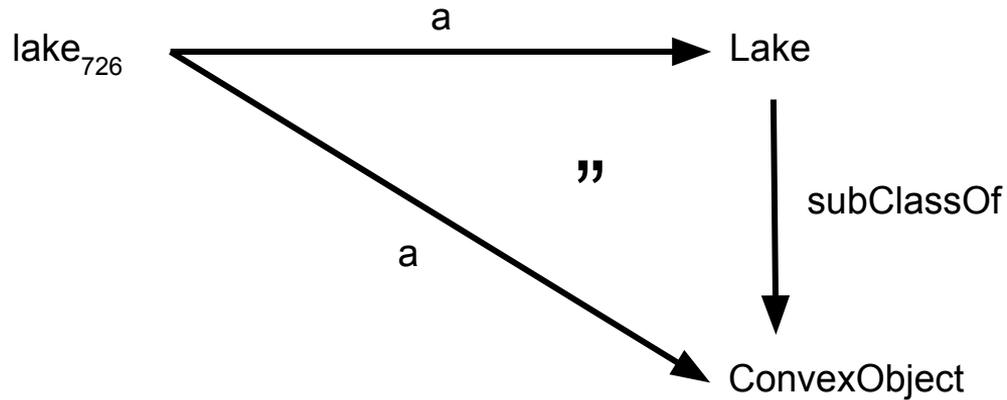
it is always possible to combine graphs without overlap

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

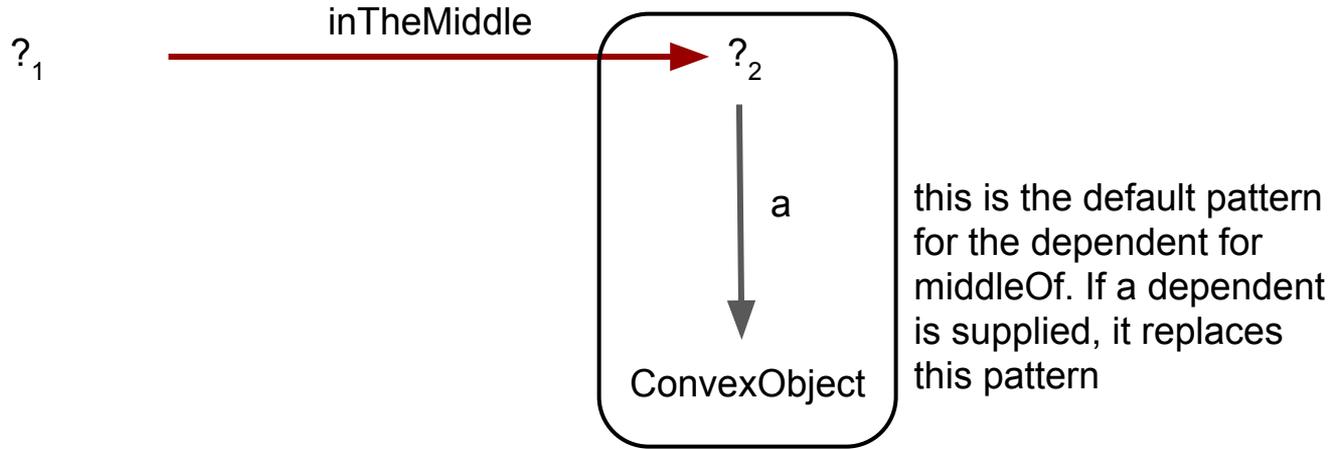
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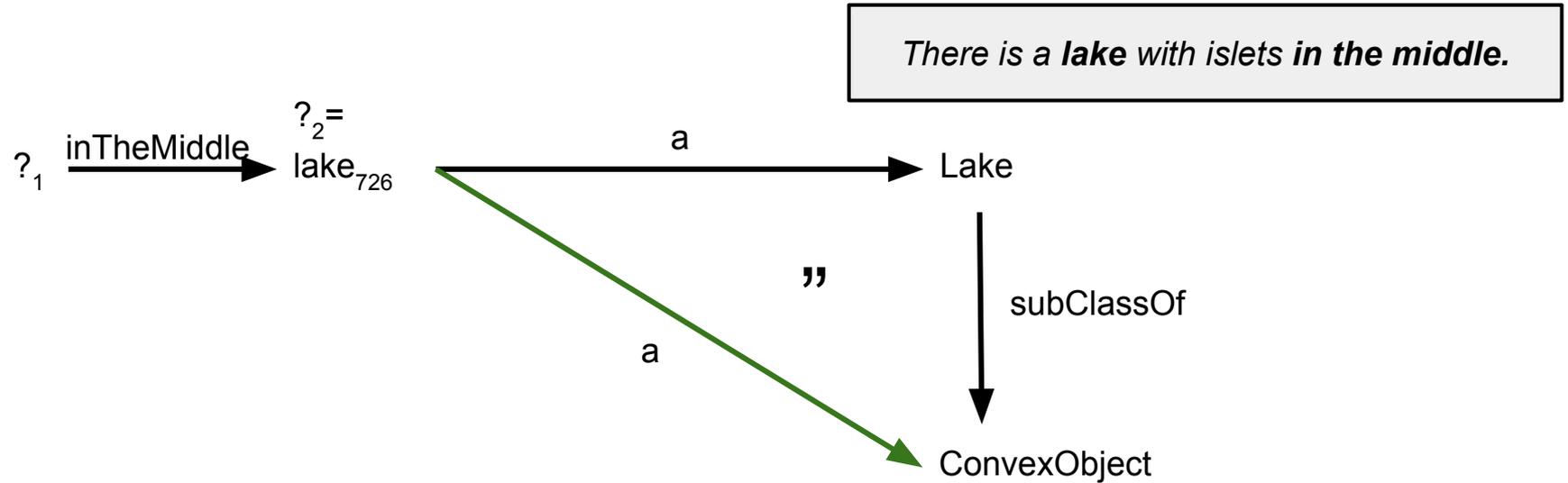


# Representing Lexical Meanings

*.. with islets in the middle.*



# Representing Lexical Meanings

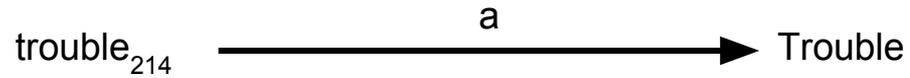


# Saliency

annotate nodes with a saliency distribution

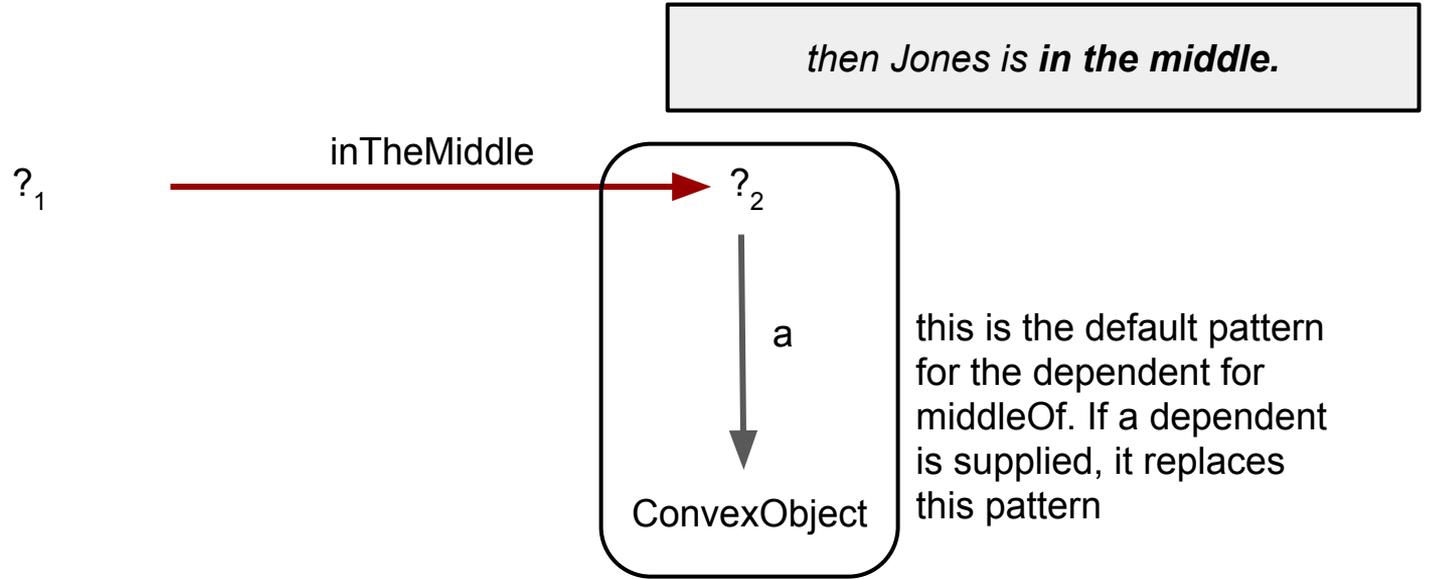
unify so as to maximise sharing of more salient components

# Representing Lexical Meanings

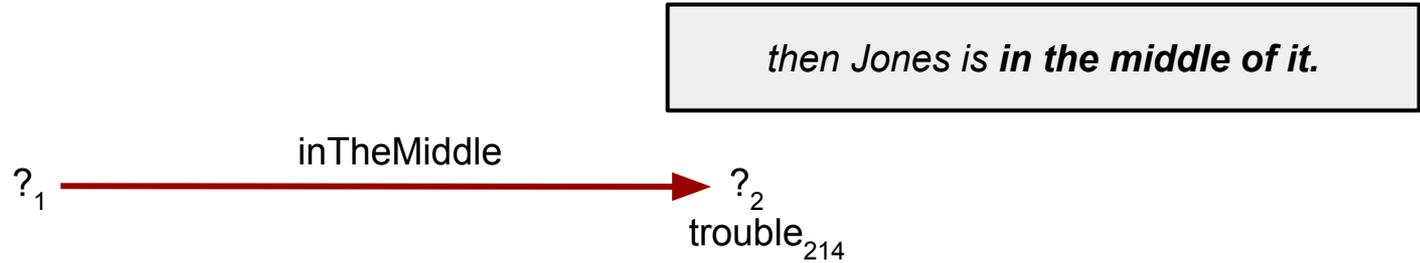


*There is some **trouble** ...*

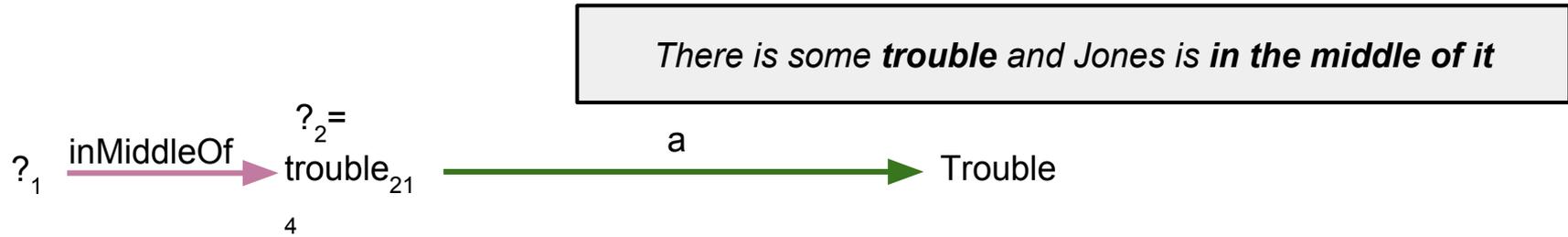
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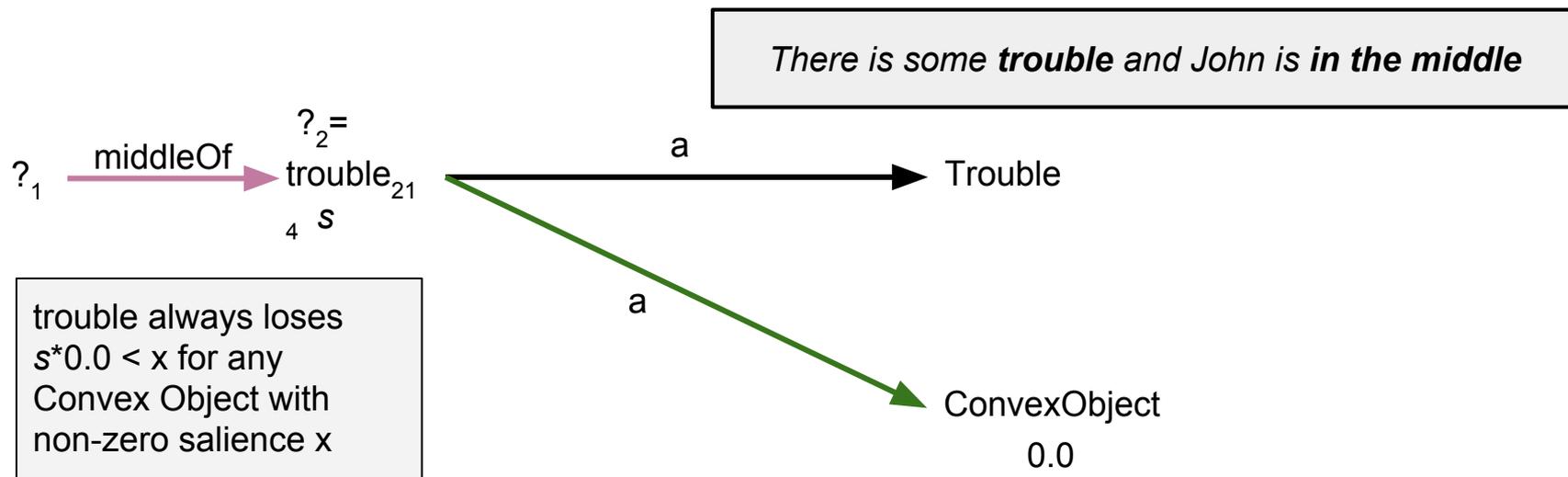
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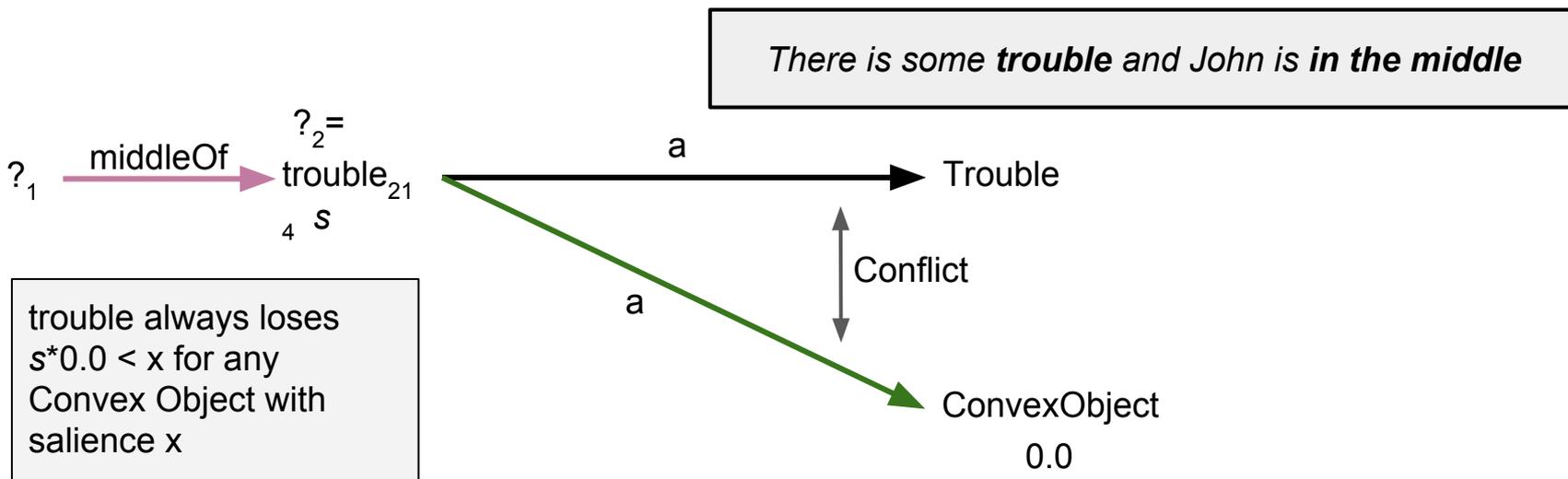
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# Obligatoriness

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

PREDICTION: over time, relations and metaphorical domains will shift towards adjacency (to reduce cognitive load)

# Conclusions

Specific semantics and/or pragmatics condition obligatory dependencies at every synchronic stage of every language.

Only rarely does it become a syntactic constraint.

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

Thank you for