

Why do we have to say certain things?

On the obligatorification of dependents



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The Wellsprings of
Linguistic Diversity



ARC CENTRE OF EXCELLENCE FOR
THE DYNAMICS OF LANGUAGE

The ... was lovely.

I would like to talk to ...

Das ist doch der ...

Ich wohne in ...

Ich werde ...

Synchronically

> seen as a **syntactic issue**

> e.g. as a part-of-speech distinction:

ADV	ADP
<i>above (X)</i>	
<i>besides</i>	<i>beside X</i>
	<i>from X</i>
<i>near</i>	

> bracketing representation: optionality ... (X) vs. obligatoriness ... X

“... takes an obligatory dependent ...”

“... is a “pro-drop” language ...”

“... was reanalyzed as taking an obligatory argument ...”

e.g.

Harris, Alice C. & Lyle Campbell. 1995. *Historical syntax in cross-linguistic perspective*. Cambridge: Cambridge UP.

Examples for obligatorification

Sanskrit	(NP) <i>madhye</i>	> NP <i>mě</i>
Homeric Greek	ἐν (NP)	> ἐν NP
OldE	<i>se</i> (N)	> <i>the N</i>
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?

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all languages conditioned by specific
semantic factors.

Obligatoriness constraints always exist in all languages conditioned by specific **semantic** factors.

Only **sometimes** does it develop into a **syntactic configuration**.

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*

Lexical Stage

Congruent Use

(NP) *madhye*



Grammatical Stage

NP *mě*

Lexical Stage

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(NP) *madhye*

Incongruent Use

NP *madhye*



Grammatical Stage

NP *mě*

Lexical Stage	Congruent Use	(NP) <i>madhye</i>
Grammatical Stage	Incongruent Use	NP <i>madhye</i>
		NP <i>mē</i>

Lexical Stage: Congruent Use

overt referent!

(1) Vedic Sanskrit

mádhye hradásya *plavasva* *vigṛhya* *catúrah* *padáh*
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)

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(2) Vedic Sanskrit

covert referent!

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)

<i>dharivi</i>	<i>ihu</i>	<i>majjhi</i>	<i>hiyayaha</i>
carry.CONV	DEM.ACC.SG	MADHYE	heart.GEN.SG

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

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only overt
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... **No matter how “salient” or “activated” the possessor!**

(4) Apabhramsha (Late Middle Indo-Aryan)

<i>tahiṃ</i>	<i>jāivi</i>	<i>ṭiṅṭahiṃ</i>	<i>gau</i>	<i>turantu /</i>
DEM.LOC.SG	go.CONV	gambling-house.LOC.SG	go.PPP.NOM.SG.M	in_haste
<i>jūvārahaṃ</i>	<i>sayalahaṃ</i>	<i>maṇu</i>	<i>harantu /</i>	
gambler.GEN.PL	all.GEN.PL	mind.ACC.SG	grab.PPA.NOM.SG.M	
<i>tahaṃ</i>	<i>majjhi</i>	<i>ṇiviṭṭhau</i>	<i>so</i>	<i>sahei /</i>
DEM.GEN.PL	madhye	settle_down.PPP.NOM.SG.M	DEM.NOM.SG.M	shine.3SG
<i>chaṇaindaho</i>	<i>līlā</i>	<i>ṇam</i>	<i>vahei</i>	
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)

Grammaticalized stage

(5) Hindi

<i>hamāre</i>	<i>ghar</i>	<i>ke 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.**’

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Obligatory dependent even in basic spatial usages.

Lexical Stage

Congruent Use

(NP) *madhye*

Incongruent Use

NP *madhye*



Grammatical Stage

NP *mě*

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Replicating the Indo-Aryan case.

Test other parts of speech.

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Example: Engl. *middle*

Congruent use

(6)

overt referent!

*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)

(7)

covert referent!

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

Incongruent use

(8)

overt referent!

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

Incongruent use

(9)

overt referent!

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highly **activated**, but still resumed

BNC results

100 million words

902 cases of non-attributive and non-compounded use of “middle”

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> **optionality of argument only in congruent uses**

> same results for other relational nouns (top, bottom, heart, foot, edge etc.)

Apparent exceptions

(10) *The truth lies in the middle.*

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Just an idiom? No:

(11) ... *in very general terms in the physical sphere a skin rash or a cold is of minor significance whereas a heart, lung or brain disease is much more serious. **Diseases of joints, muscles and gut lie somewhere in the middle.***

Replicating the Indo-Aryan case.

Test other parts of speech.

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ADV (+ N) > ADP + N	Homeric Greek ἐν (NP) > ἐν NP
DEM (+ N) > ART + N	OldE <i>se</i> (NP) > <i>the</i> NP
V (+ PP)	Engl. verbs of movement

ADV (+ NP) > ADP + NP

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

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Lexical Stage: **Congruent** use

(12)

<i>(ópseai ...)</i>	<i>néas</i>	<i>emás,</i>	<i>en</i>	<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)

(13)

Argeîoi d' en nēusi phílēn es patríd' ébēsan

Argives PTC in ship:DAT.PL.F dear: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

(14)

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**

(15)

*... 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)

(16)

*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

(17) anamnestic (“recognitional”) 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)

V (+ PP)

(18)

Finally, he arrived (at the hotel).

> *Everyone was waiting at the hotel. Finally, he arrived.*

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Finally, he arrived (at the hotel).

> *Everyone was waiting at the hotel. Finally, he arrived.*

Finally, he arrived at the conclusion.

> **Everything pointed to this conclusion. Finally he arrived.*

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Finally, he arrived (at the hotel).

> *Everyone was waiting at the hotel. Finally, he arrived.*

Finally, he arrived at the conclusion.

> **Everything pointed to this conclusion. Finally he arrived.*

(Note: Semantically driven obligatoriness requires syntactic optionality. Thus, direct objects in English are a different matter!)

V (+NP)

(19) Vera'a (Austronesisch), **kongruent – kovert**

durum wōl ēn raw anē den di va'anē le sur mē diē so ba gitōk

,So the two had bought the **intra-sex pig** from him now, **gave (it)** to him. He said: 'That's good.'
(veraa_as1_016, Stefan Schnell, Multi-Cast LAC Cologne)

(20) Vera'a (Austronesisch), **kongruent – kovert**

'alōgi so ban raw suwēnē 'erē vanō' alē

,he said: ,But the intra-sex pig is right there, **you go with (it)**.' Alright.'
(veraa_as1_063, Stefan Schnell, Multi-Cast LAC Cologne)

So, what does it really mean to be “**incongruent**”?

“The job of the metaphor is to provide relational structure to an abstract domain by importing it (by analogy) from a more concrete domain.” (Boroditsky 2000: 3)

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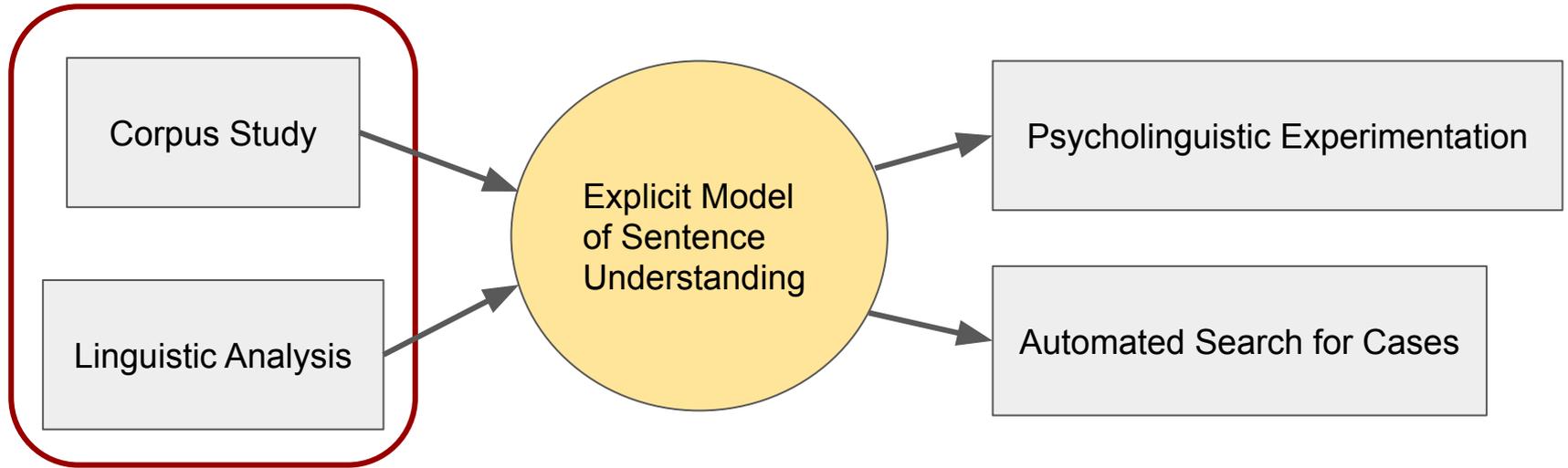
How do “recognitional” uses of demonstratives fit?

- > Something is pointed at which is not in fact present in the current discourse universe.
- > Thus relational structure is imported.

A brief outlook

Modelling.

Experiments.

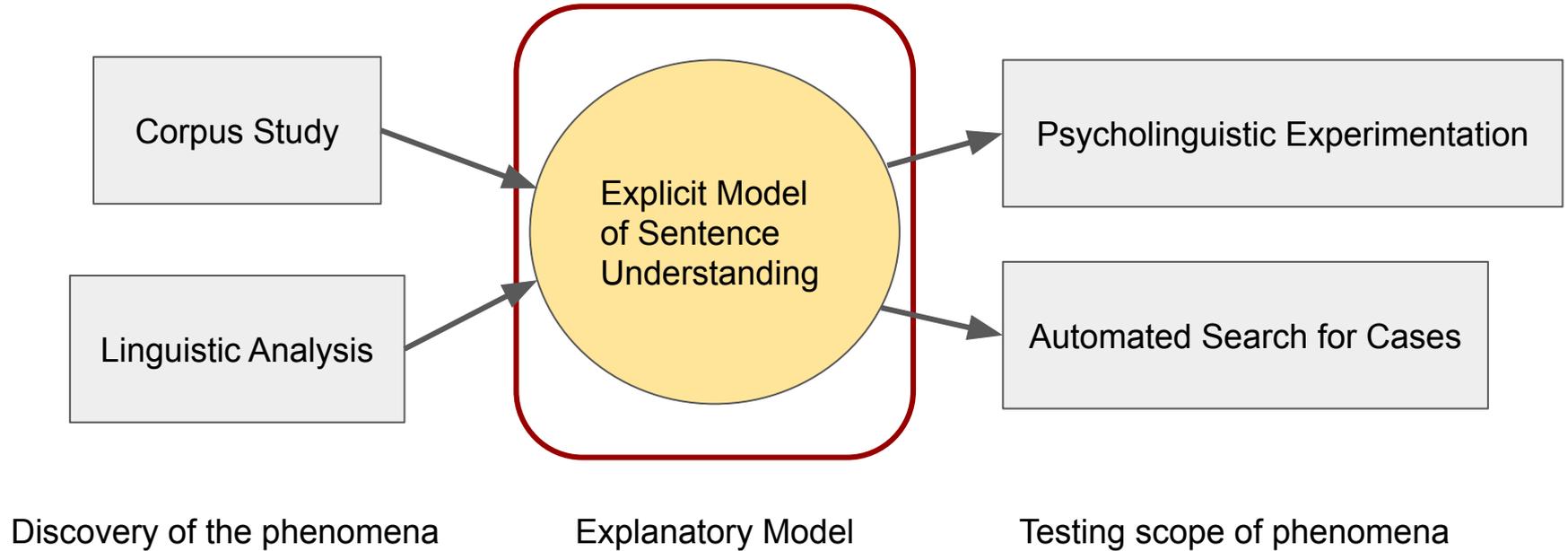


Discovery of the phenomena

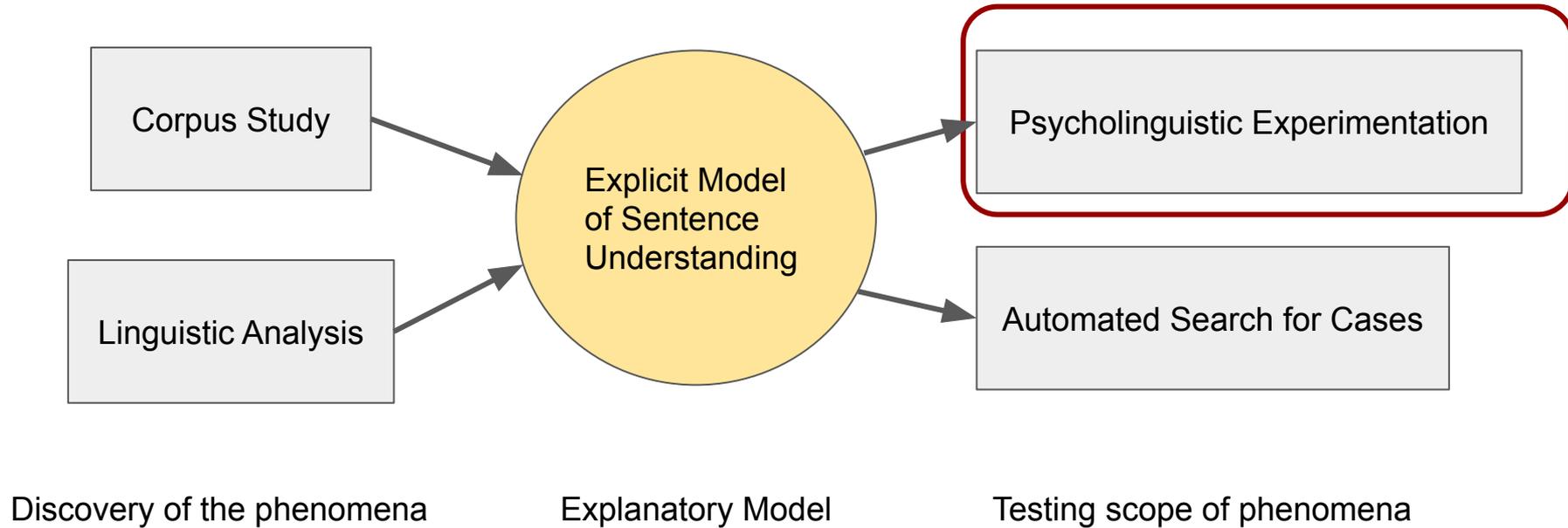
Explanatory Model

Testing scope of phenomena

Modelling



Experiments

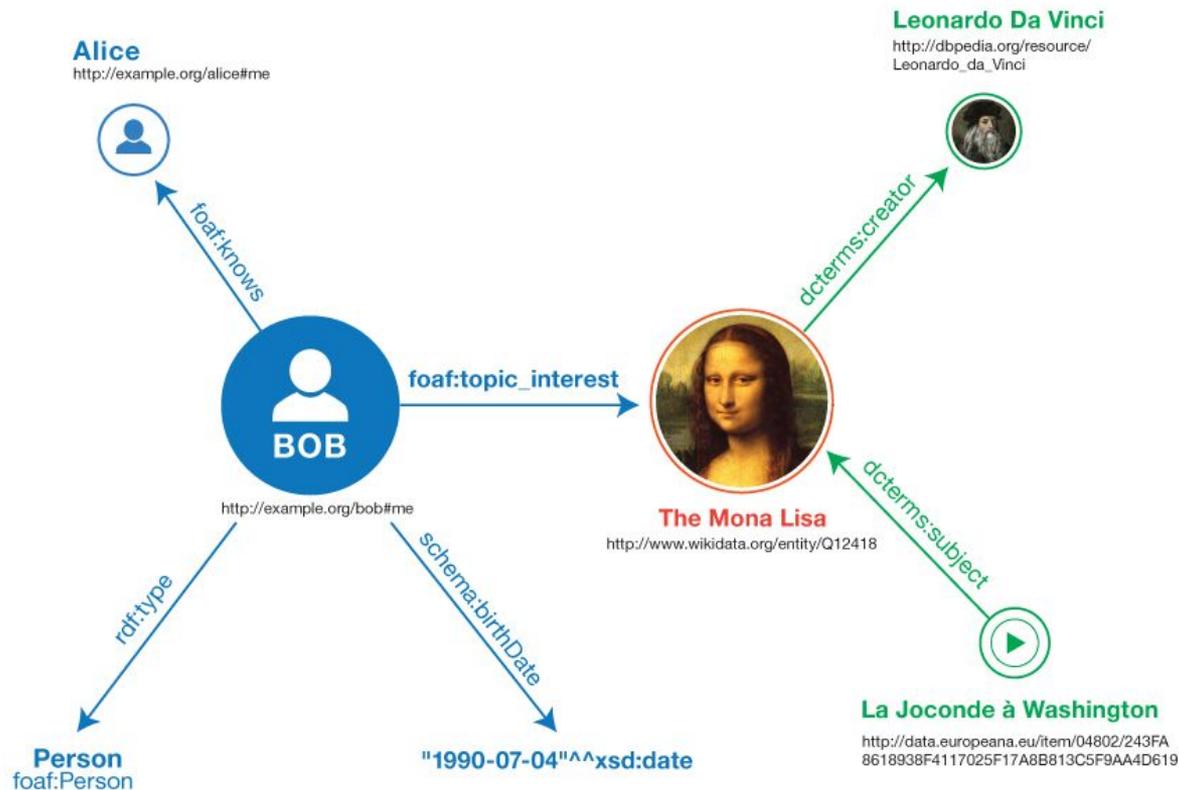


An Explicit Model of Obligatorification

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, Pisoni's 1998 Neighbourhood Activation Model)

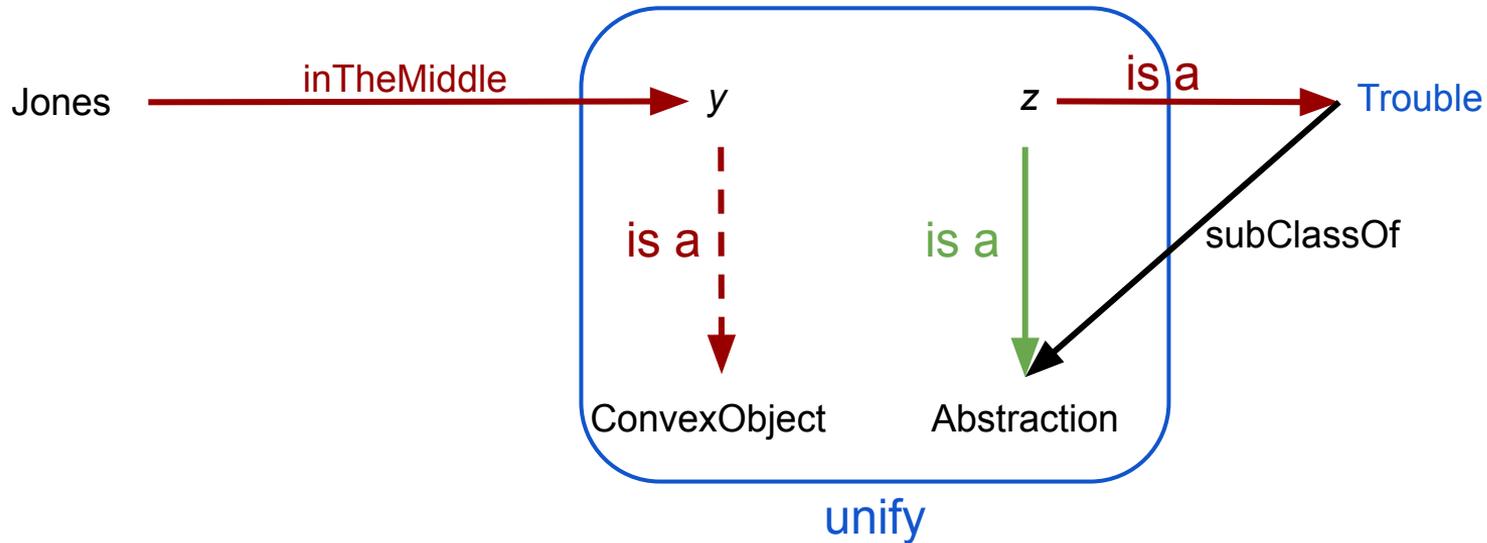
Representing Categorical Semantics



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

covert referent!

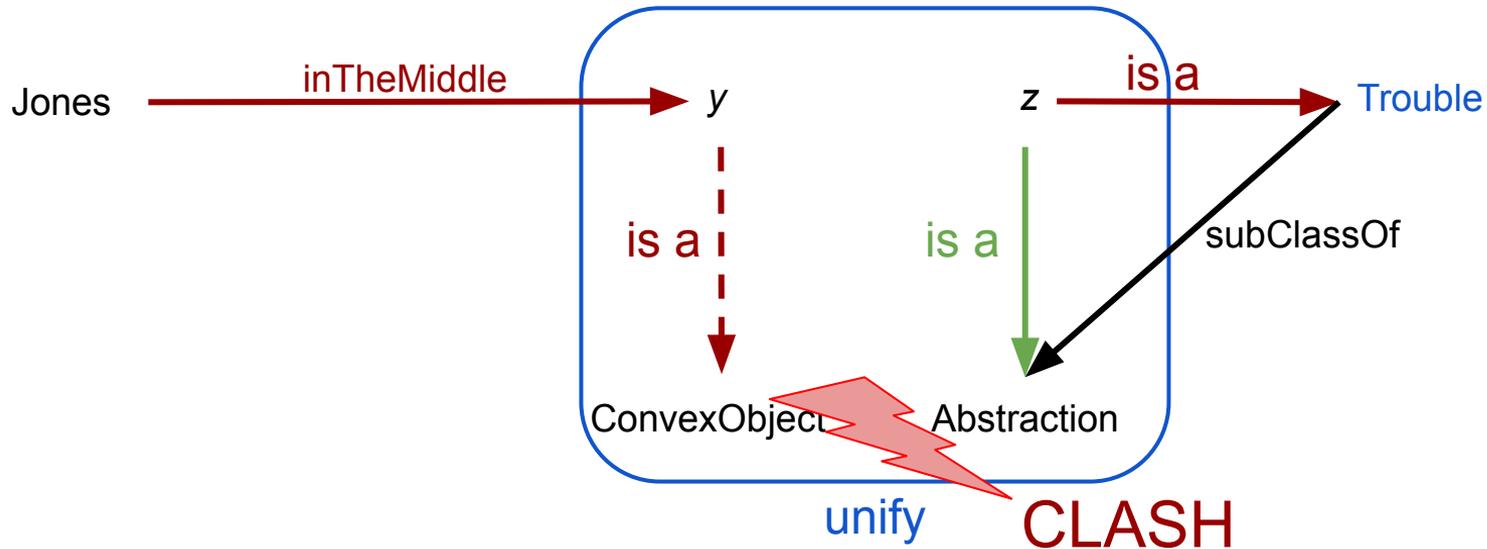
*... then Jones is **in the middle**.*



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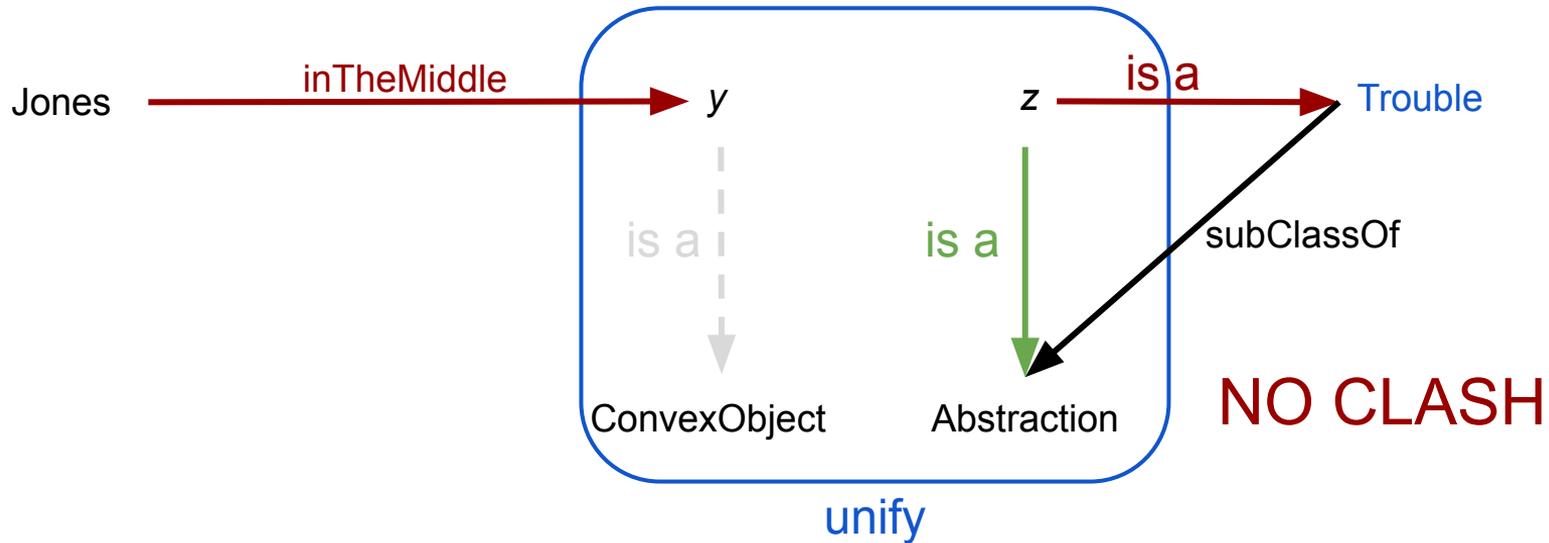
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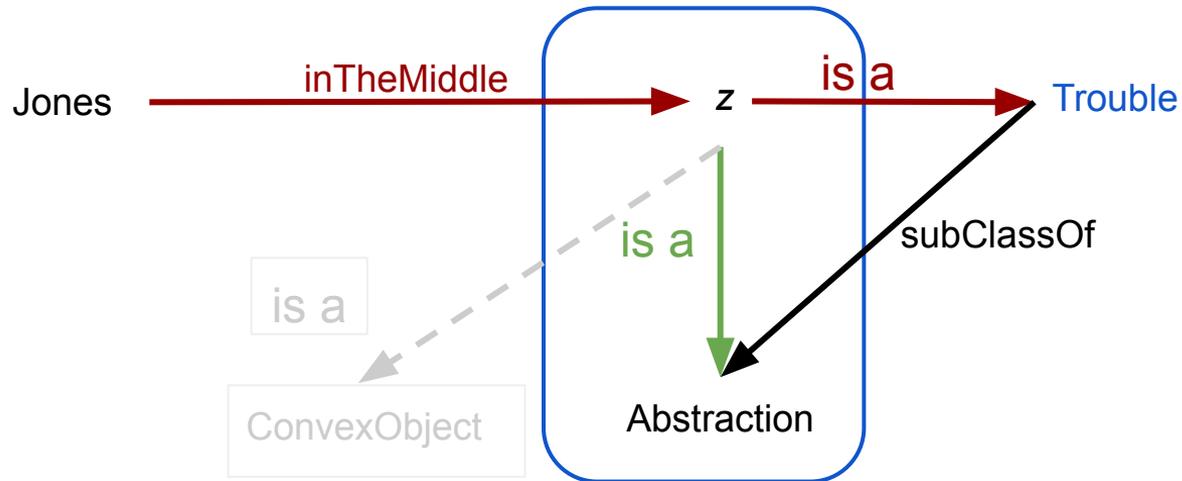
*... then Jones is **in the middle of it**.*



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

overt referent!

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



Sentence completion experiment

- Test nouns with prepositional phrases (including possessor phrases) or demonstrative determiner
- 13 target words in a congruent and incongruent combination each (= 26 test sentences)
- Four versions in order to test for structural priming
 - 2x mixed congruent/incongruent with complementary sets of one from each pair of stimuli and 6/7 distribution)
 - Congruent only
 - Incongruent only
- 246 participants

Experiment Results

	% Covert
Congruent	61%
Incongruent	0.4%
Incongruent (other driver)	31%

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Bayes factor for more-vs-less than 0.05 difference between Incongruent and Congruent covert fractions $\sim 10^8$ to 10^{46} *per target word*

Conclusions - The semantic origins of configurationality

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Incongruency involves the importing of relational structure, i.e. metaphor.

Semantically conditioned obligatoriness only rarely develops into a syntactic constraint.

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

Thank you for

References

- Boroditsky, Lera. 2000. “Metaphoric structuring: understanding time through spatial metaphors”, *Cognition* 75, 1-28.
- Harris, Alice C. & Lyle Campbell. 1995. *Historical syntax in cross-linguistic perspective*. Cambridge: Cambridge UP.
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