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
above (X)	
besides	*beside X*
	from X
near	

> 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) *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?

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

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

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*

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Lexical Stage: Congruent Use

(1) Vedic Sanskrit

overt referent!					

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

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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)

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

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> ***only* overt**
> referent!

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… **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)

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.**'

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Obligatory dependent even in basic spatial usages.

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

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Replicating the Indo-Aryan case.

Test other parts of speech.

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Example: Engl. *middle*

Congruent use

(6)

*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)

> **overt** referent!

(7)

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

> **covert** referent!

Incongruent use

(8)

$\boxed{\textbf{overt} \text{ referent!}}$

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

Incongruent use

(9)

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

highly **activated**, but still resumed

overt referent!

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

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902 cases of non-attributive and non-compounded use of "middle"

> 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 ἐv (NP) > ἐv NP
DEM (+ N) > ART + N	OldE *se* (NP) > *the* 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)

(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)

(13)

Argeîoi d'   **en   nēusì**   *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*	*è̄*	*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**

(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 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**

(17) **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)

V (+ PP)

(18)

Finally, he arrived (at the hotel).

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

V (+ PP)

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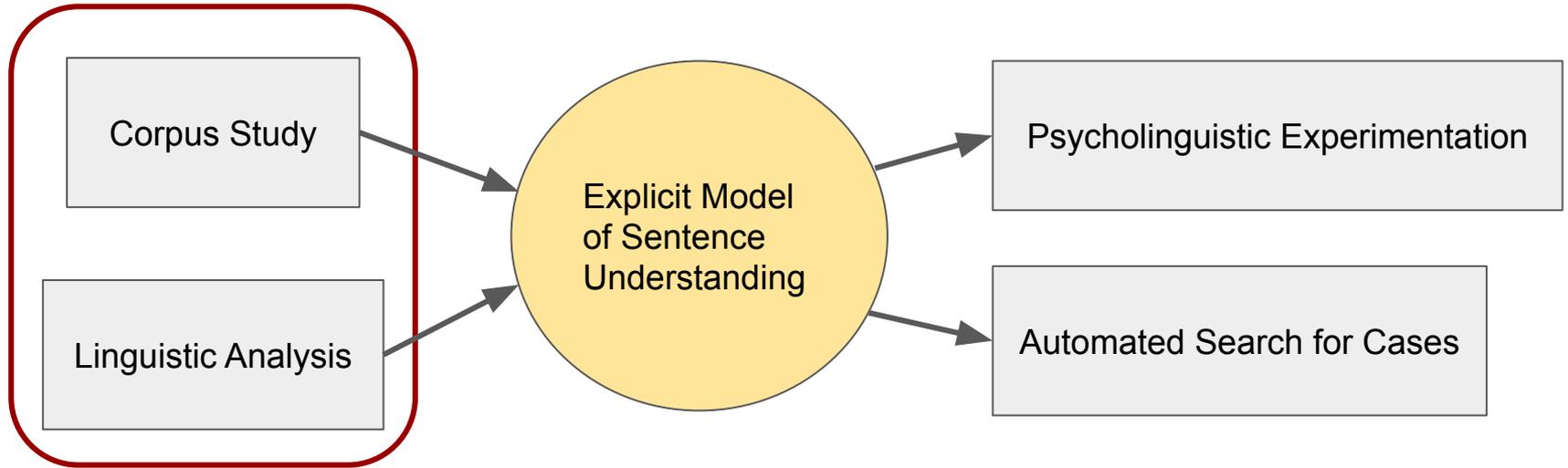
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"The job of the metaphor is to provide relational structure to an abstract domain by importing it (by analogy) from a more concrete domain." (Boroditsky 2000: 3)

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.
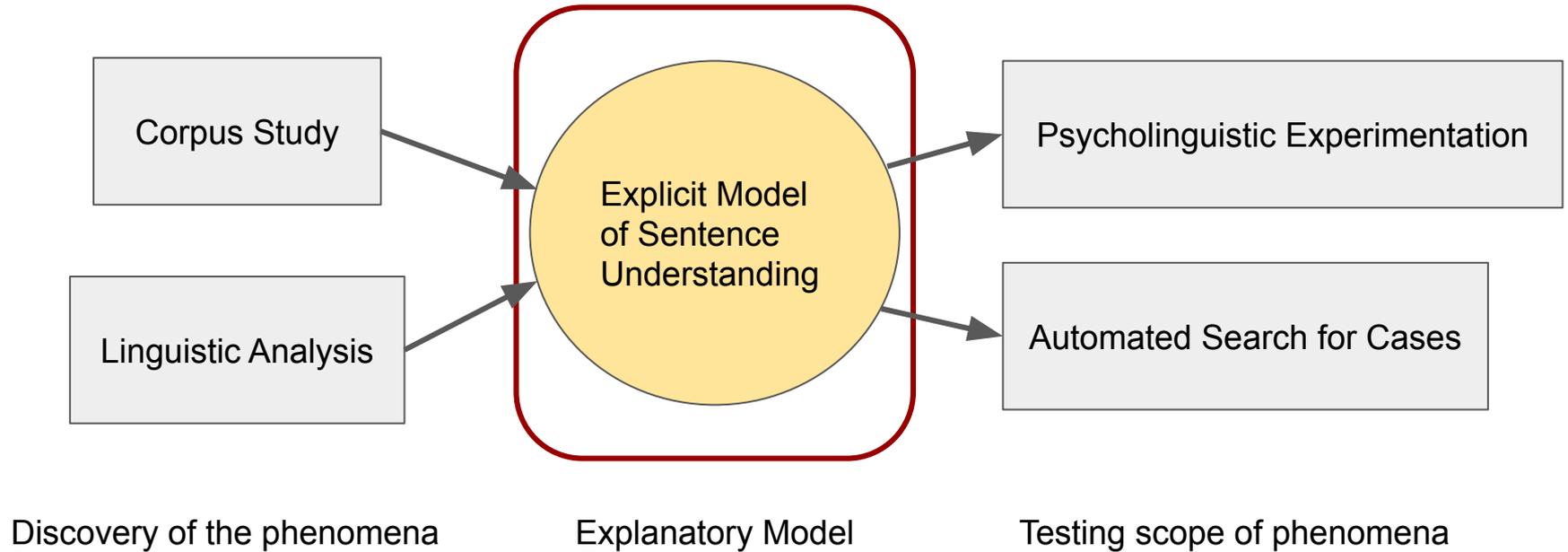
A brief outlook

Modelling.

Experiments.

Corpus Study

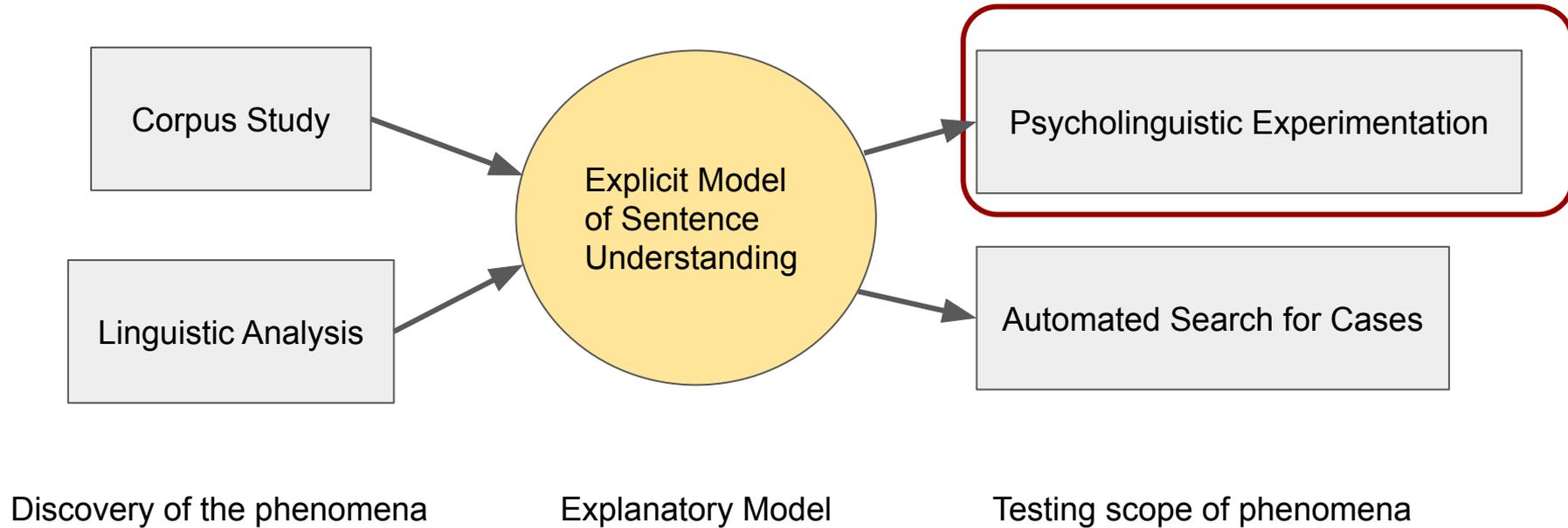Linguistic Analysis

Explicit Model of Sentence Understanding

Psycholinguistic Experimentation

Automated Search for Cases

Discovery of the phenomena

Explanatory Model

Testing scope of phenomena

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| Discovery of the phenomena | Explanatory Model | Testing scope of phenomena |

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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)
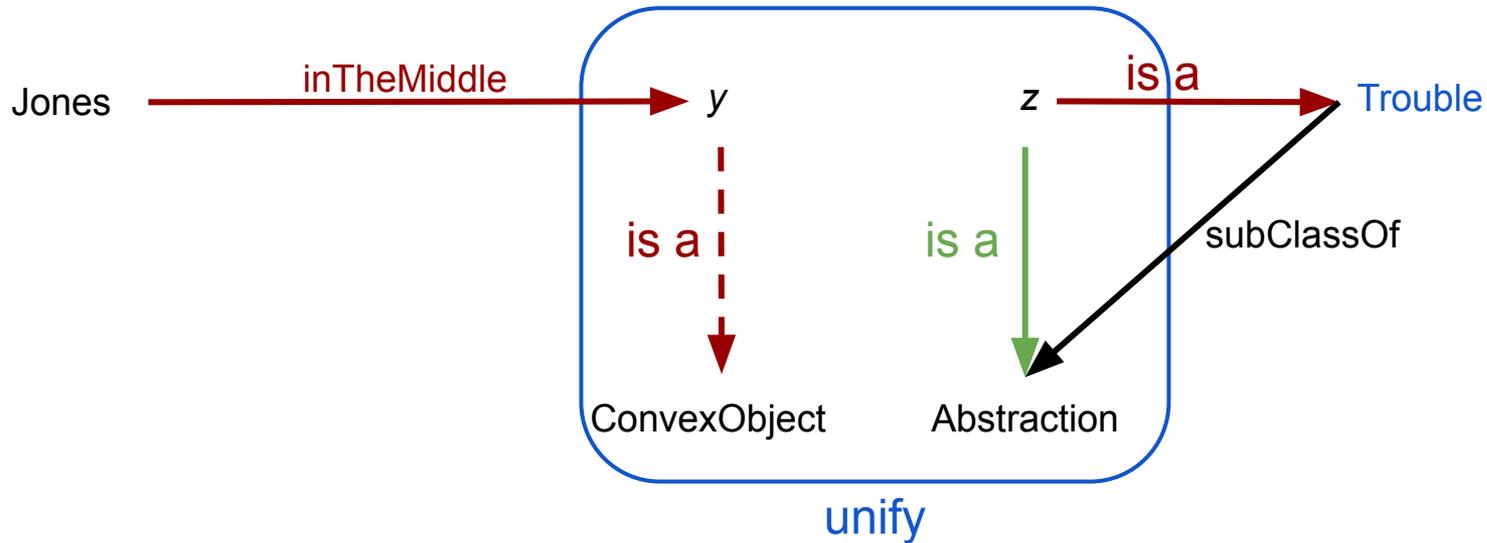
Representing Categorical Semantics
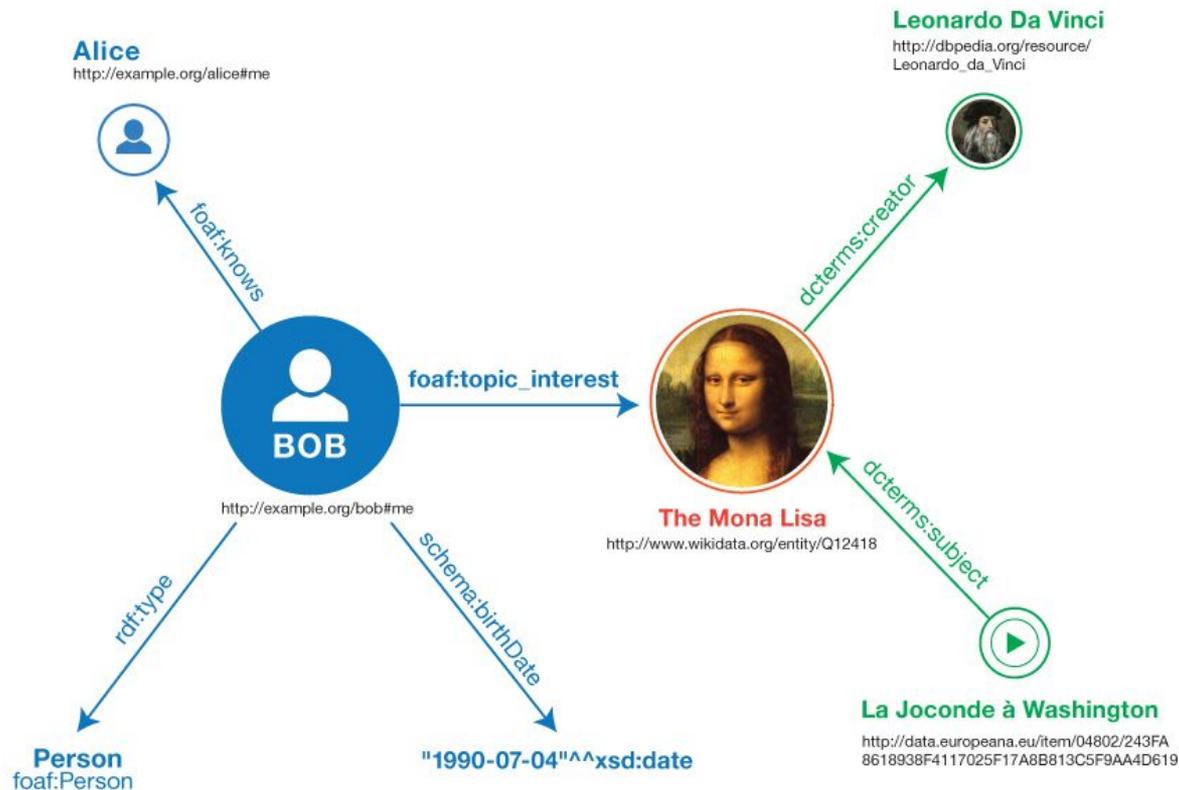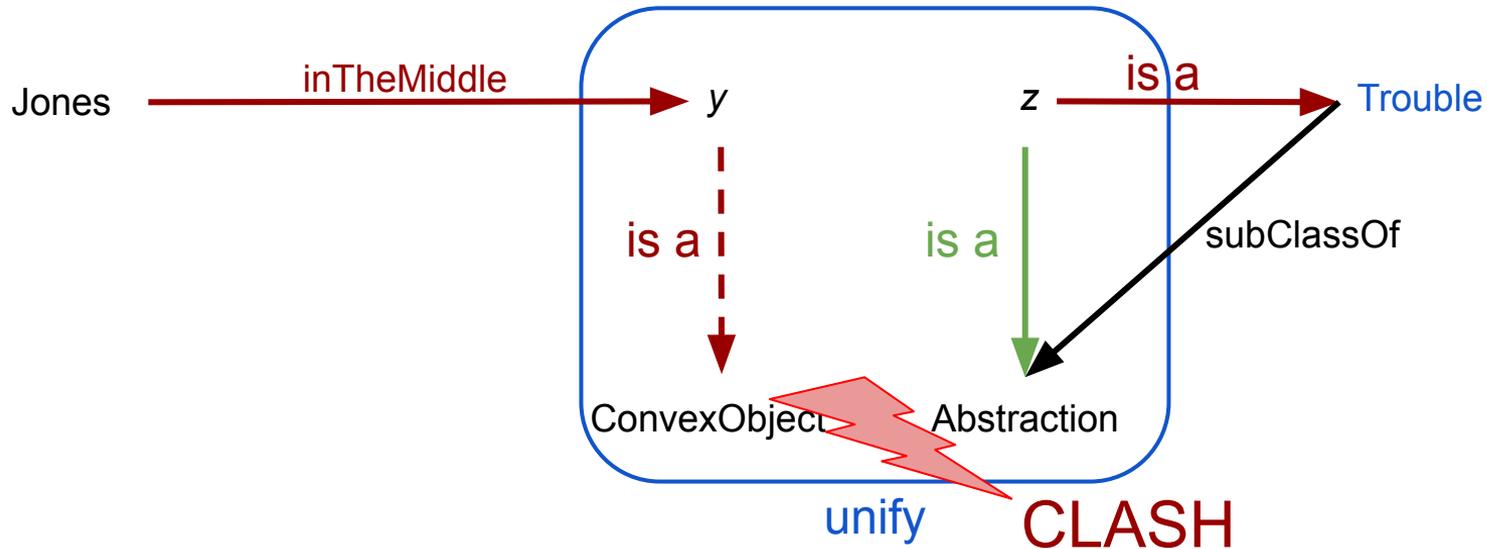
*If there is **trouble** ...*

covert referent!

*… then Jones is **in the middle.***

Jones ──inTheMiddle──→ y   z ──is a──→ Trouble

y ┄is a┄→ ConvexObject

z ──is a──→ Abstraction

subClassOf

unify

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

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Jones —— inTheMiddle —→ *y*   *z* —— is a —→ Trouble

is a (y → ConvexObject)

is a (z → Abstraction)

subClassOf

unify

CLASH

62

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

overt referent!

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

Jones ──inTheMiddle──▶ *y*   *z* ──is a──▶ Trouble

is a

is a   subClassOf

ConvexObject   Abstraction   NO CLASH

unify

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

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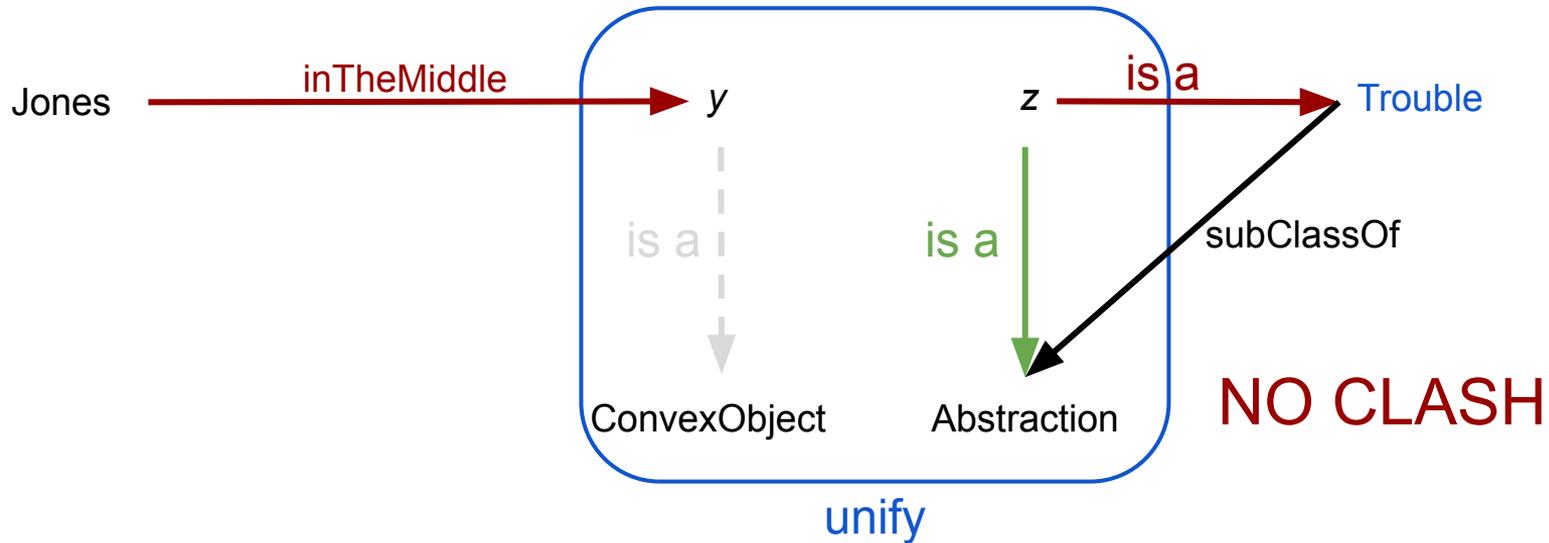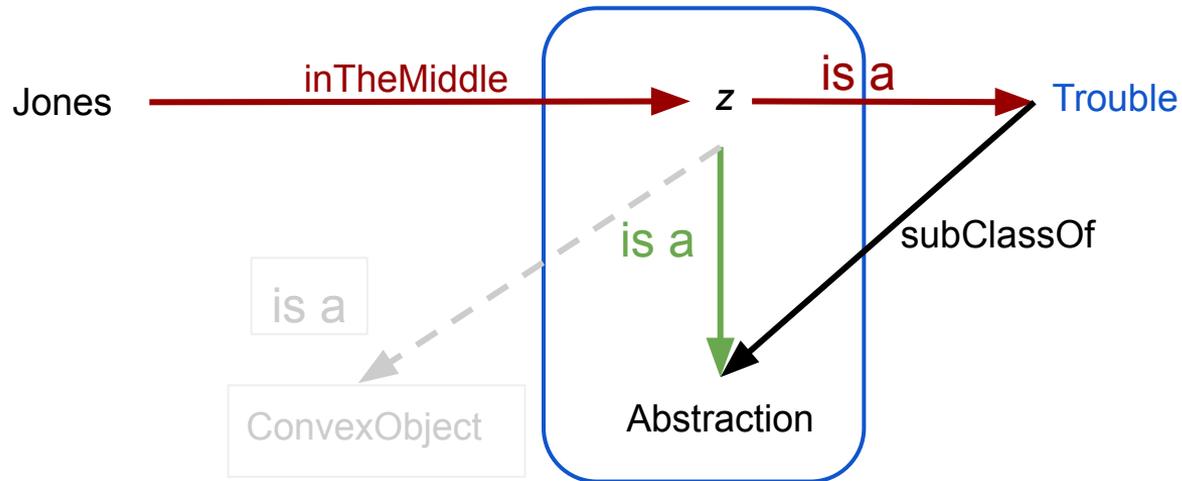
Sentence completion experiment

- 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%

Conclusions - The semantic origins of configurationality

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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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