



# The logic of the lexicon

ANR Loci ANR Polymnie

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## 1. 2 national projects, both with an interest in the lexicon

**ANR LOCI** Locativity and interactivity in logic, linguistics and theoretical computer science

The lexicon crystallises meaning resulting from past interactions in various contexts.

**ANR POLYMNIÉ** Parsing and synthesis with abstract categorial grammars. From lexicon to discourse

The lexicon contains the mappings (in particular constants to lambda terms). It is a two level structure a bit like Montague semantics.

## 2. 2 logical & non standard views of the lexicon

Both views involve logic :

proof theoretical interaction.

proof terms that compute semantic representation.



### 3. Montague semantics

Montague semantics :

<b>word</b>	<b>semantic type</b> $u^*$ <b>semantics</b> : $\lambda$ - <b>term of type</b> $u^*$ $x^v$ the variable or constant $x$ is of type $v$
<b>some</b>	$(e \rightarrow t) \rightarrow ((e \rightarrow t) \rightarrow t)$ $\lambda P^{e \rightarrow t} \lambda Q^{e \rightarrow t} (\exists^{(e \rightarrow t) \rightarrow t} (\lambda x^e (t \rightarrow (t \rightarrow t) (P x)(Q x))))$
<b>club</b>	$e \rightarrow t$ $\lambda x^e (\text{club}^{e \rightarrow t} x)$
<b>defeated</b>	$e \rightarrow (e \rightarrow t)$ $\lambda y^e \lambda x^e ((\text{say\_about}^{e \rightarrow (e \rightarrow t)} x)y)$
<b>Leeds</b>	$e$ Leeds

## 4. Enriched with lexical semantics

How got encompass word meaning (Dowty)

Types to block infelicitous compositions :

The chair barks.

Their 5 is fast.

But accepting meaning transfers :

Their 5 is fast.

(Un)Felicitous copredications :

I forgot to bring the book I liked.

Liverpool defeated Leeds and voted.

Is licensing triggered by words or by types ?

class (set of pupils)  $\rightarrow$  room

promotions (set of pupils)  $\not\rightarrow$  room

Frontier between knowledge representation (ontology with relations) and lexical use.

## 5. Word vectors, lexical networks

Lexical functions (Polguère / Melcuk) which is said to be comparable to Pustejovsky generative lexicon.

A lexical acquired and checked by (serious) games JeuxDeMots

What is the structure of a lexical network ?

How do we find our way inside a lexicon (e.g. to find a word on the tip of the tongue) ?



## 6. Lexical meaning and ontologies

A particular form of word knowledge are ontologies.

How can they be described ?

How can they be acquired, from text or interactively ?



## 7. Type theories for integrating lexical semantics in compositional semantics

The connection between lexical meaning and syntax will also be addressed.

For instance how do we interpret names, that are lexical items as well ?

