Arguments and Adjuncts

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All major linguistic theories distinguish between **arguments and adjuncts**

- *In Paris, he always **relies** on buses.*
- *In Paris, he always **reads** on buses.*

- *He **treats** them well.*
- *He **teaches** them well.*

Many proposed **criteria for distinguishing arguments from adjuncts**, but:

- they are **pairwise incompatible**,
- **no single criterion fully agrees with intuitions** of linguists,
- **no real progress** for the last 60 years (since Tesnière 1959).

This talk:

- **the argument–adjunct dichotomy (AAD) is far from established** (Przepiórkowski 1999a,b,c, 2016a,b, 2017b,d),
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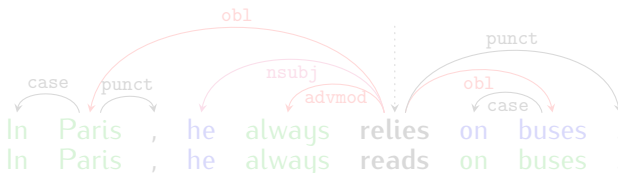- **no real progress** for the last 60 years (since Tesnière 1959).

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- *not* between **arguments** and **adjuncts**,
- but rather **between core** (subject, object) **and non-core** (other dependents).

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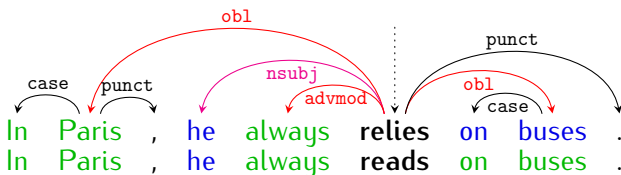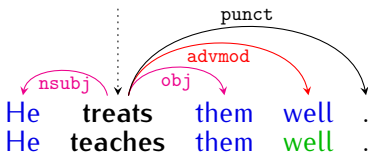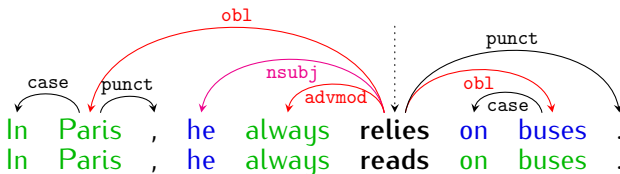
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Core vs. non-core distinction as currently implemented:

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Problems (Przepiórkowski and Patejuk 2018 – COLING 2018):

- these rules of thumb **reintroduce the argument/adjunct distinction** (claimed to be eschewed in UD),
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Terminology: **dependents = arguments + adjuncts**
             arguments = subject + complements

How to distinguish **arguments** from **adjuncts**?

- John {read / put} the book **in the attic**.
- John {threw / treated} the book **carelessly**.
- John {slept / spent} **two hours** recovering from the exercise.

Tesnière 1959: three **pairwise incompatible criteria**:

- arguments are often obligatory, adjuncts are always optional,
- nominal phrases are arguments, adverbial phrases are adjuncts,
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                 arguments = subject + complements

How to distinguish arguments from adjuncts?

- John {read / put} the book **in the attic**.
- John {threw / treated} the book **carelessly**.
- John {slept / spent} **two hours** recovering from the exercise.

Tesnière 1959: three **pairwise incompatible criteria**:

- **arguments** are often obligatory, adjuncts are always optional,
- nominal phrases are **arguments**, adverbial phrases are adjuncts,
- arguments denote participants in an event or state, **adjuncts** refer to its circumstances.

Only **obligatoriness** assumed in contemporary linguistics.

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No consistent intuitions or tests 2

Obligatoriness:

- at best a partial test (obligatory → argument),
- not even that, as some prototypical adjuncts are obligatory for pragmatic reasons (Goldberg and Ackerman 2001).

Grimshaw and Vikner 1993:

- #The house was **built**.
- The house was **built**...
  - ...yesterday.
  - ...in ten days.
  - ...in a bad part of town.
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The above '**pragmatic obligatoriness**' results from the Maxim of Quantity (Grice 1989), but there are also **other kinds of obligatoriness**.

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Kinds of obligatoriness

Syntactic – e.g., EAT VS. DEVOUR:
- *He has already eaten. | He eats at 5pm.*
- **He has already devoured. | *He devours at 5pm.*

But (attested):
- *He doesn't eat, he devours.*

Conditions (discourse and otherwise) under which obligatoriness should be tested rarely discussed.

Semantic (Panevová 1974, Fillmore 1986):
- Charles has just arrived, but I don't know where from.
- ?Charles has just arrived, but I don't know where (to).

Disputed in Recanati 2002, 2007 (also Przepiórkowski 2016a).

Ontological, e.g.: the patient of EAT is an argument because every eating event involves such a patient.

By the same reasoning, time and place are arguments of all events.

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Do so

Many other criteria posited in the last 50 years (many quickly discarded, usually pairwise incompatible): extractability, iterability, specificity, *do so*...

Do so **test**: verbal proforms such as *do so* (*do the same*, etc.) must refer to a verb with **all its arguments** (apart from subject) and optionally some adjuncts:

- John ate a banana yesterday, and Geraldine *did so* today.
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Problem: known cases where the reference of verbal proforms may omit some arguments (Miller 1992, Culicover and Jackendoff 2005):

- Robin broke the window with a hammer and Mary *did the same* to the vase.
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No consistent intuitions or tests   3

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Common reactions:

- the distinction is there, we just **haven't found good tests yet** (after 60 years of intensive research, at least since Tesnière 1959 and Chomsky 1965),

- it's **an *n*-way distinction**; usually, $n = 3$, but $n = 6$ in Somers 1984, etc. (i.e. replace 1 ill-defined distinction with $(n - 1)$ ill-defined distinctions).

Burden of proof on the shoulders of advocates of AAD.

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Burden of proof on the shoulders of advocates of AAD.

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For the time being, the zero hypothesis should be that **the argument–adjunct dichotomy is only perceived**.

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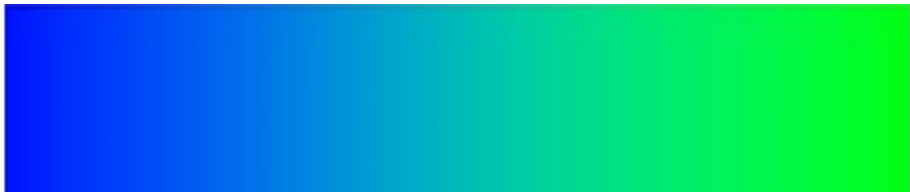
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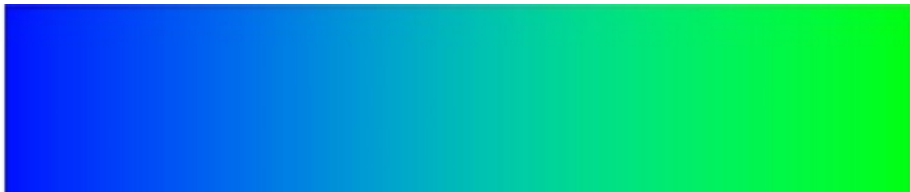
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Argument structure

Many theories assume that **lexical items specify their arguments** (but not adjuncts):

- argument structure,
- valency,
- θ-grid, etc.

Valency dictionaries exist for many languages. But **lexicographers don't agree on what counts as an argument**.

An **experiment** (Przepiórkowski and Fast 2005):

- take two largest valency dictionaries for Polish,
- take some 50 verbs, take all valency frames for these verbs,
- compare them using F-measure (100 = total agreement, 0 = total lack of agreement).
- Result: 65.5 = well above chance, but very well below total agreement.

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Dependent structure

Solution: replace argument structure with **dependent structure** – list all dependent types.

Two **immediate problems**:

- taxonomy of **types of dependents**:
  - **what types of dependents** are there (beneficiary, instrument, temporal, durative, frequentive, locative, ablative...),
  - how are they **morphosyntactically realised** in a given language (NP of a specific case, PP with a specific preposition, CP with a specific complementiser, etc.),
  - aren't there **too many** dependent types?
- **redundancy**:
  - it makes sense to list idiosyncratic dependents (roughly, arguments),
  - but not **dependents which are predictable**.

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- various **traditional** classifications of 'actants' (complements) and 'circumstantials' (adjuncts),
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  - within the **Functional Generative Description** approach (Sgall *et al.* 1986),
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The problem of **redundancy**: mentioning, say, a temporal dependent in lexical entries of (almost) all verbs

- **not practically feasible** for lexicographic purposes,
- **not theoretically feasible** as a model of human language faculty.

The **problem disappears** when:

- lexicon as a **'list of lexemes'** is replaced with
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- especially, as a **multiple inheritance hierarchy**.

Examples of such **hierarchical approaches to the lexicon**:

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Dependent structure – FrameNet

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Dependent structure – FrameNet

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Dependent structure – FrameNet

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Dependent structure – FrameNet

Event
Place
Time
Duration

Process

Objective_influence

Intentionally_act
Agent

Activity

Transitive_action

Intentionally_affect
Beneficiary

Apply_heat
Container
Temperature

fry
heat
boil

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Dependent structure – FrameNet

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Dependent structure – FrameNet

Event — Place / Time / Duration

Process

Objective_influence

Intentionally_act — Agent

Activity

Transitive_action

Intentionally_affect — Beneficiary

Apply_heat — Container / Temperature

fry
heat
boil

Lexicon without AAD

Przepiórkowski 2017a,b,c:

- implementation of such **lexical multiple inheritance hierarchy**
- in **Lexical Functional Grammar** (LFG; Bresnan 1982, Bresnan *et al.* 2015, Dalrymple *et al.* 2019)
- and **Glue Semantics** (Dalrymple 1999).

In **partial summary**:

- **valency lexicons** have trouble distinguishing arguments from adjuncts,
- so they should contain information about **all possible dependents**;
- **such lexicons may be organised hierarchically**, in a way that avoids redundancies and preserves generalisations,
- **such lexicons may be parts of linguistic theories**.

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Syntax without AAD   1

Linguistic theories distinguish arguments from adjuncts:

- in their representations,
- in their internal mechanisms,
- often in both ways.

Example – **Principles and Parameters** (Chomsky 1981, 1986).

Assumes *X-bar theory* (Chomsky 1970, Jackendoff 1977):

- XP → Spec, X′
- X′ → X′, YP   (YP – adjunct)
- X′ → X, YP   (YP – argument)

For example:

- NP → Spec N′
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Syntax without AAD   2

This leads to the following representation (Haegeman 1994: 99):

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Syntax without AAD   3

Another example – **Lexical Functional Grammar**:

- does not (necessarily) distinguish arguments from adjuncts in constituency trees,
- but does **distinguish them in functional structures**.

For example:

Austin resided in Oxford.

$$
\begin{bmatrix}
\text{PRED} & \text{'RESIDE}\langle\text{SUBJ,OBL}\rangle\text{'} \\
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'AUSTIN'} \end{bmatrix} \\
\text{OBL} & \begin{bmatrix} \text{PRED} & \text{'IN}\langle\text{OBJ}\rangle\text{'} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'OXFORD'} \end{bmatrix} \end{bmatrix}
\end{bmatrix}
$$

Austin died in Oxford.

$$
\begin{bmatrix}
\text{PRED} & \text{'DIE}\langle\text{SUBJ}\rangle\text{'} \\
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'AUSTIN'} \end{bmatrix} \\
\text{ADJ} & \left\{ \begin{bmatrix} \text{PRED} & \text{'IN}\langle\text{OBJ}\rangle\text{'} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'OXFORD'} \end{bmatrix} \end{bmatrix} \right\}
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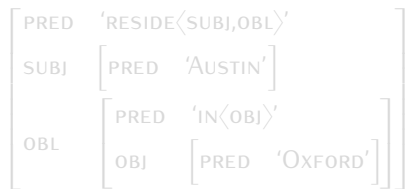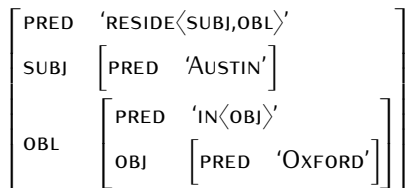**Grammar**
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Introduction	Criteria	Lexicon	**Grammar**	Coda
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Syntax without AAD   4

What about *Austin **resided and died** in Oxford*?

Similar **attested examples** (Patejuk and Przepiórkowski 2016):

- *If a person **resided and died** in a foreign country and had assets in US, can the estate be probated in US?*
- *Prime Minister Sir Winston Churchill **resided and died** in Number 28 on the street called Hyde Park Gate...*
- *We assessed data on Medical Examiner-certified suicide victims aged 65 years or older from 2001 through 2004 who had **resided and died** in New York City...*

A proposal of Patejuk and Przepiórkowski 2016 and Przepiórkowski 2016b (similar suggestion earlier in Alsina 1996):

- **represent all dependents as a set** (or, as in HPSG, list ordered by obliqueness),
- **single out only** the robust grammatical functions – **subject and object**.

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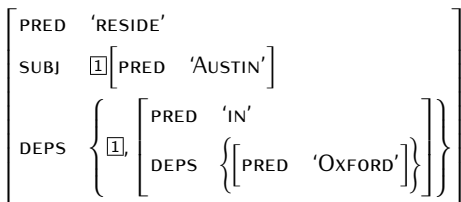
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On that proposal:

Austin resided in Oxford.   *Austin died in Oxford.*

$$
\begin{bmatrix}
\text{PRED} & \text{`RESIDE'} \\
\text{SUBJ} & \boxed{1}\begin{bmatrix} \text{PRED} & \text{`AUSTIN'} \end{bmatrix} \\
\text{DEPS} & \left\{ \boxed{1}, \begin{bmatrix} \text{PRED} & \text{`IN'} \\ \text{DEPS} & \left\{ \begin{bmatrix} \text{PRED} & \text{`OXFORD'} \end{bmatrix} \right\} \end{bmatrix} \right\}
\end{bmatrix}
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\begin{bmatrix}
\text{PRED} & \text{`DIE'} \\
\text{SUBJ} & \boxed{1}\begin{bmatrix} \text{PRED} & \text{`AUSTIN'} \end{bmatrix} \\
\text{DEPS} & \left\{ \boxed{1}, \begin{bmatrix} \text{PRED} & \text{`IN'} \\ \text{OBJ} & \left\{ \begin{bmatrix} \text{PRED} & \text{`OXFORD'} \end{bmatrix} \right\} \end{bmatrix} \right\}
\end{bmatrix}
$$

In effect, there is no argument–adjunct distinction in syntax.

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Syntax without AAD   5

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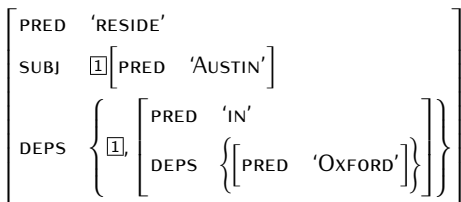
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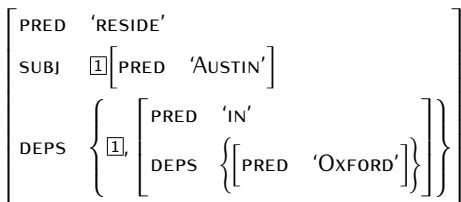
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Semantics without AAD

How about semantics?

LFG commonly assumes **neo-Davidsonian semantic representations**
(Davidson 1967, Castañeda 1967, Parsons 1990), e.g.:

- *Austin resided in Oxford*:
  $\exists e \; reside(e) \land past(e) \land agent(e, austin) \land location(e, l) \land in(l, oxford)$
- *Austin died in Oxford*:
  $\exists e \; die(e) \land past(e) \land agent(e, austin) \land location(e, l) \land in(l, oxford)$

Such representations are also derived on the modified LFG approach of
Przepiórkowski 2016b, 2017b,c.

Hence, on this approach, **there is no argument–adjunct distinction
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Summary

In summary:

- **no operational procedure** distinguishing arguments from adjuncts has been proposed for the last 60 years,
- there is **no stable intersubjective intuition** of AAD,
- hence, **the onus is on the advocates of** AAD;
- but **current linguistic theories presuppose** AAD,
- so is a coherent approach to **the lexicon and the grammar possible which does not presuppose** AAD?
- This **has been demonstrated** in Patejuk and Przepiórkowski 2016 and Przepiórkowski 2016b, 2017b,c.

Universal Dependencies:

- replaces AAD with the **core/non-core distinction**, so it is on the right track (and in the avant-garde!),
- but it should **resist the temptation to re-introduce** AAD,
- and it should revise the **currently incoherent implementation of the core/non-core distinction** (Przepiórkowski and Patejuk 2018).

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Thank you for your attention!

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