LING 201: Introduction to Linguistics

EMU
Fall 2011
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Verb Valencies

- Brief summary of classical argument structure approaches (from e.g. Haegeman (1991))
- Valencies
- Argument Structure
- Theta Theory

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Transitivity

- **Classical view:**
  - ... describes the minimal number of arguments a predicate requires
    - in a well-formed sentence, given that...
    - the arguments are controlled by the predicate, and
    - the subject is excluded.

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Transitivity

- Examples:
  - Intransitive:
    - *sleep → John sleeps.*
  - Transitive:
    - *buy → John buys a car.*
  - Ditransitive:
    - *give → John gives the car dealer the money.*

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Valency

- Same as transitivity, but the external arguments count as well, i.e. subjects are part of the valency frame:
  - *sleep* → *John sleeps.* Val. = 1
  - *buy* → *John buys a car.* Val. = 2
  - *give* → *John gives him the money.* Val. = 3

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Valency

- Brown & Miller (1996:359):
  - Valency refers to the capacity of a verb to take a specific number and type of arguments (noun phrase positions).
  - Verbs can be divided into classes based on their valency (how many arguments or ‘valents’ they can take). In some languages, these classes may have distinctive morphosyntactic characteristics, such as unique case marking patterns, or restrictions on tense/aspect/modality marking.

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Valency

Brown & Miller (1996:359)

SIL web page

Verb class	**no. arg.**	**example**
Univalent, agentive	1 agent	*dance*
Univalent, patient	1 patient	*die*
Divalent (or Bivalent)	2	*kill, eat*
Trivalent	3	*give, put*

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Valency

- Problems:
  - Purely descriptive, i.e. lack of explanatory power
  - From a theoretical or computational linguistics perspective more additional information is required.

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Valency

- Classical view:
  - The verb dictates the number of required arguments.
  - The valency properties are treated as idiosyncratic properties of each single verb.

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Generative Approach

- What is the knowledge of native speakers that makes them be aware of well- or ill-formedness or oddity of such constructions?

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Generative Approach

- Formalizing the notion of Valency:
  - Identification of properties of constituents selected by verbs:
    - syntactically
    - semantically

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Generative Approach

- Syntactic properties:

  John sleeps.

  sleep: verb, intransitive

- But, what about verbs like *meet*?

  John met Mary.

- We want to express: *meet* is transitive, i.e. requires a nominal complement.

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Generative Approach

- But the transitivity requirements of *meet* can be satisfied with other type of constructions:

John met some man from Paris.

Who did John meet?

- where the complement of meet is not just a noun, but a noun phrase (NP), and
- the unmarked canonical position of this NP is to the right of the verb.

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Generative Approach

- Thus, the Chomskian type of annotation would look like:

  meet: V, [— NP]

  - It expresses two requirements of *meet*:
    - one (and only one) NP complement is required
    - the NP occurs canonically to the right of the verb (unmarked word order)

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Generative Approach

- Thus, other verbs would be specified as follows:
  - **sleep**: V, [—]
  - **give**: V, [— NP, NP]
- These frames are called **subcategorization frames**, i.e. they express the intuition that a verb like *give* subcategorizes for or selects an NP.

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Generative Approach

- Subcategorization frames:
  - simple descriptions of VP-internal minimal requirements for well-formedness
    - no explanation
    - implication: the notion transitive or intransitive is an unexplained primitive property of grammar (Haegeman, 1991)

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Generative Approach

- Intuition:
  - transitivity follows from the type of action or state expressed by the verb, i.e. its semantic properties
  - a verb like *imitate* in the sentence:

    John imitates his boss.

  - expresses an activity and involves two participants (an active one, and a passive one)

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Generative Approach

- In terms of formal logic:
  - *P*(*xy*)
  - with *P*=”*imitate*”, *x*=”*John*”, *y*=”*his boss*”
    - *x* and *y* are **referring expressions** that select an entity from the **universe of discourse**
    - *P* is a predicate that takes two arguments, *x* and *y*.

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Generative Approach

- Thus we distinguish between:
  - one-place predicates: *sleep*, ...
  - two-place predicates: *imitate*, ...
  - three-place predicates: *give*, ...

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Generative Approach

- The number of involved participants does not determine the syntactic category that realises these arguments:
  - Semantically the properties of the arguments in the following examples are the same, as is the activity:
    - *John gives Mary a book.*
    - *John gives a book to Mary.*

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Generative Approach

- Thus the formalisation of the argument structure of a verb includes:
  - the subject,
  - the place information in the logical sense,
  - as well as the syntactic category information, as in:

    give: V; 1 2 3

    NP NP NP

    NP NP PP

  -

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Generative Approach

- Arguments can be invisible, but nevertheless present in the meaning of a construction:
  - *John bought a new car.*
  - *John bought Mary a new car.*
- Both argument structures of *buy* are the same, the first contains an **implicit** argument.

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Generative Approach

- Implicit arguments are marked with parentheses in the argument structure:

buy: V; 1 (2) 3

NP NP NP

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Generative Approach

- Other categories have argument structures as well: Adjectives

John is restless.

* *John is restless about himself.*

restless: A; 1

NP

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Generative Approach

- Other categories have argument structures as well: Adjectives

John is anxious about himself.

John is anxious.

* *John is anxious himself.*

anxious: A; 1 (2)

NP PP

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Generative Approach

- Other categories have argument structures as well: Nouns

John analyses the data.

* *John analyses.*

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Generative Approach

- Other categories have argument structures as well: Nouns

John's analysis of the data is crucial.

The analysis is necessary.

analysis: N; (1) (2)

NP PP

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Generative Approach

- Other categories have argument structures as well: Prepositions

John is in Paris.

in: P; 1 2

NP NP

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Generative Approach

- Other categories have argument structures as well: Prepositions

Windsurfing between life and death

between: P; 1 2 3

NP NP NP

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Valency

- **General observation:**
  - For common sentences with common verbs the judgments of native speakers are more or less clear for sentences like:

John sleeps.

* *John sleeps the bed.*

* *John gives the car dealer.*

John gives him the money.

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Valency

- **General observation:**
  - For native speakers the oddity is more or less clear as well, for examples like:

? *The table dances tango.*

? *The stone sings the chair.*

? *The UEFA-cup falls on the spotlight.*

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Generative Approach

- Properties of arguments in the argument structure:

The cat killed a mouse.

kill: V; 1 2

NP NP

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Generative Approach

- Intuition:
  - arguments differ with respect to semantic relationship to the verb:
    - AGENT: *cat*
    - PATIENT: *mouse*
  - The thematic role of each argument is determined by the verb: *kill*. The verb assigns a thematic role to its arguments.

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Thematic Roles

- AGENT: the one who intentionally initiates the action...
- PATIENT: the person or thing undergoing the action...
- THEME: the person or thing moved by the action...
- EXPERIENCER: the entity that experiences some (psychological)...
- ...expressed by the predicate

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Thematic Roles

- LOCATION: the place in which the action or state expressed by the predicate is situated.
- GOAL: the entity towards which the activity expressed by the predicate is directed.
- BENEFICIARY: the entity that benefits from the action...
- SOURCE: the entity from which something is moved as a result of the activity...
- ...expressed by the predicate

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Theta Theory

- Thematic grid of verbs:
  - **kill**: V,

AGENT NP	PATIENT NP

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Theta Theory

- Thematic grid of verbs in concrete examples:
  - *The cat$_i$ killed the mouse$_k$.*
- **kill**: V,

AGENT NP	PATIENT NP
i	k

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Theta Theory

- Towards explanations:

  **The cat$_i$ killed.*

- **kill**: V;

AGENT NP	PATIENT NP
i	?

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Theta Theory

- Towards explanations:

  **The cat$_i$ killed the mouse$_k$ the dog$_n$.*

- **kill**: V;

AGENT NP	PATIENT NP	? NP
i	k	n

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Theta Theory

- Necessary assumptions:
  - **Theta criterion**
    - Each argument is associated with one and only one theta role.
    - Each theta role is assigned to one and only one argument.

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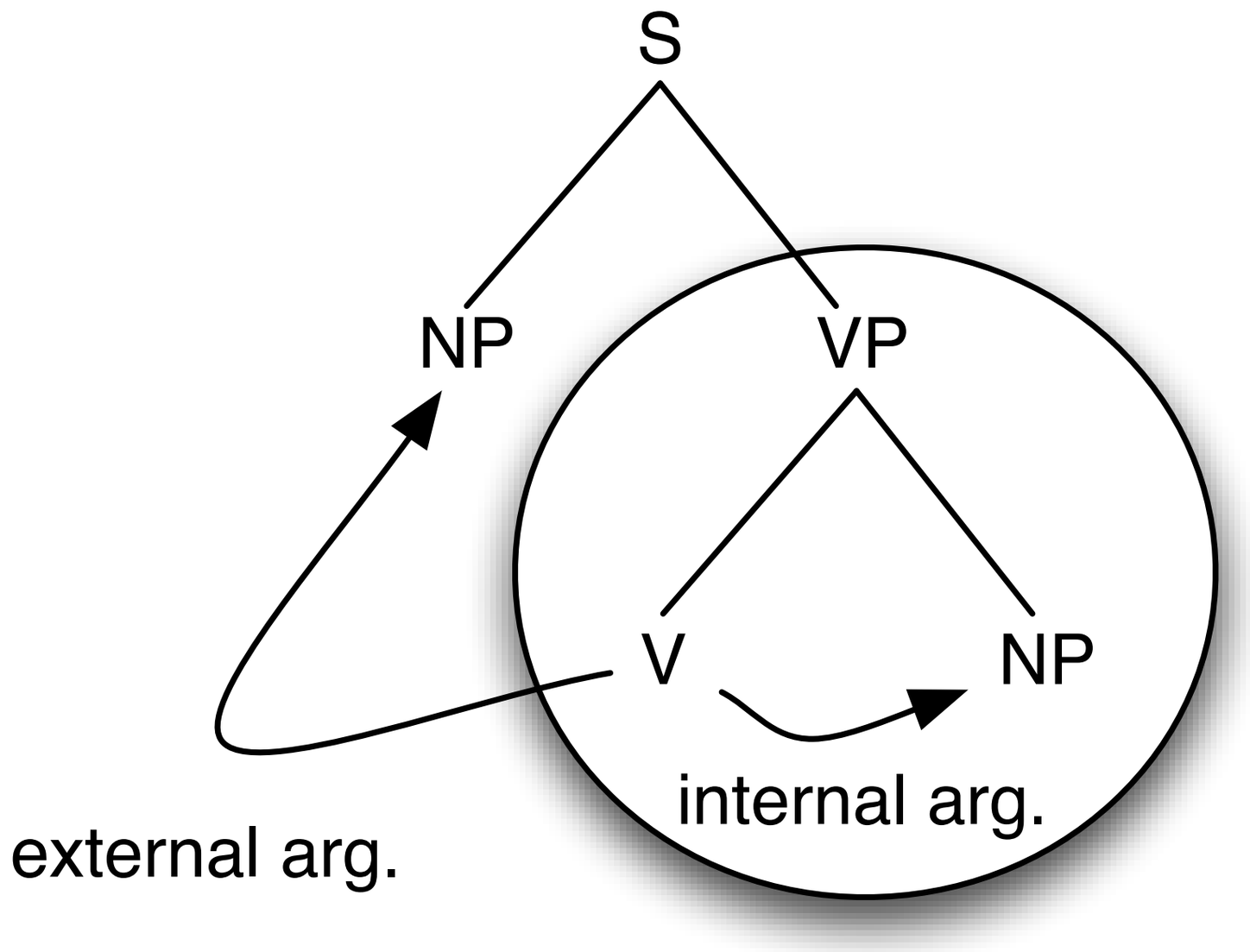
Theta Theory



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Classical Observations

- Thematic relations and Case somehow correlate
- Passives
  - differ from the active variant with respect to case and thematic role assigned by the verb.
  - The external thematic role disappears, the verb cannot assign accusative case anymore.

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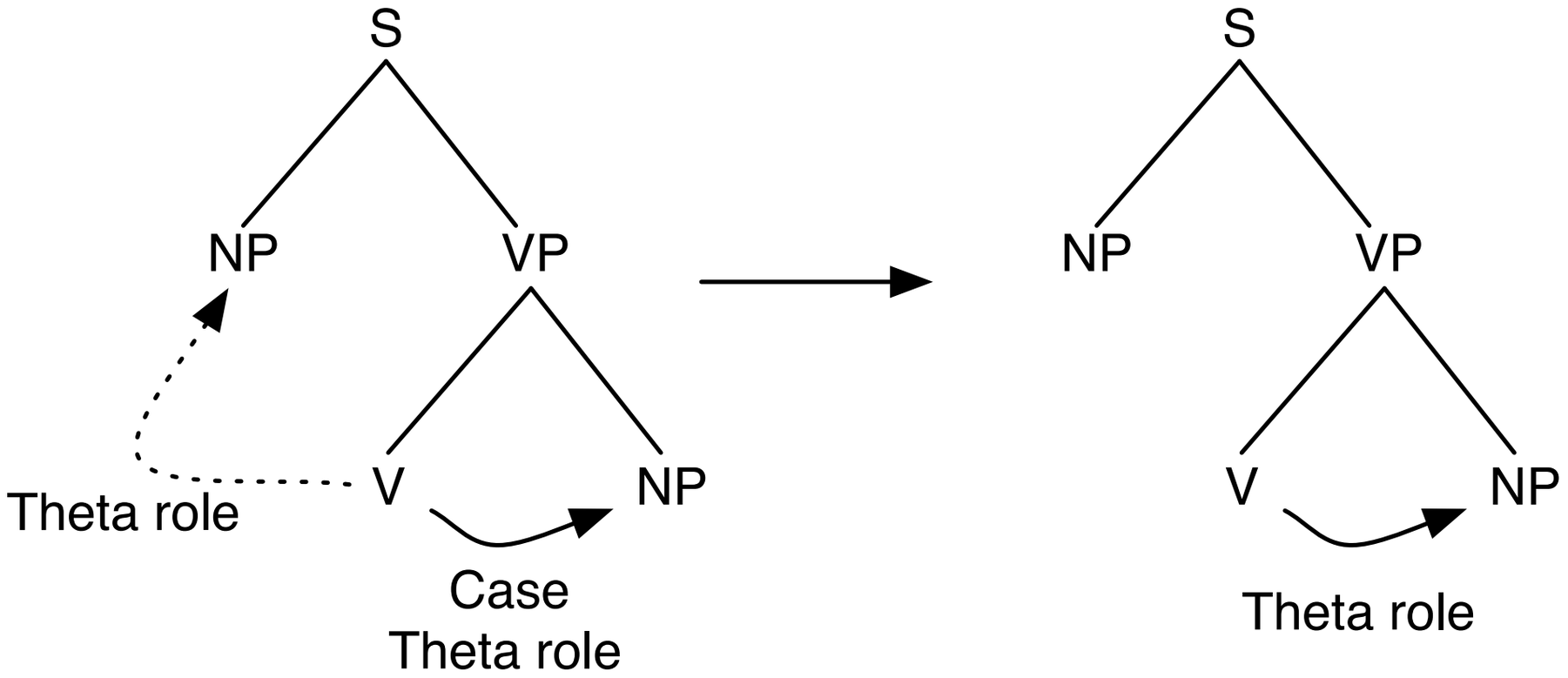
Passive



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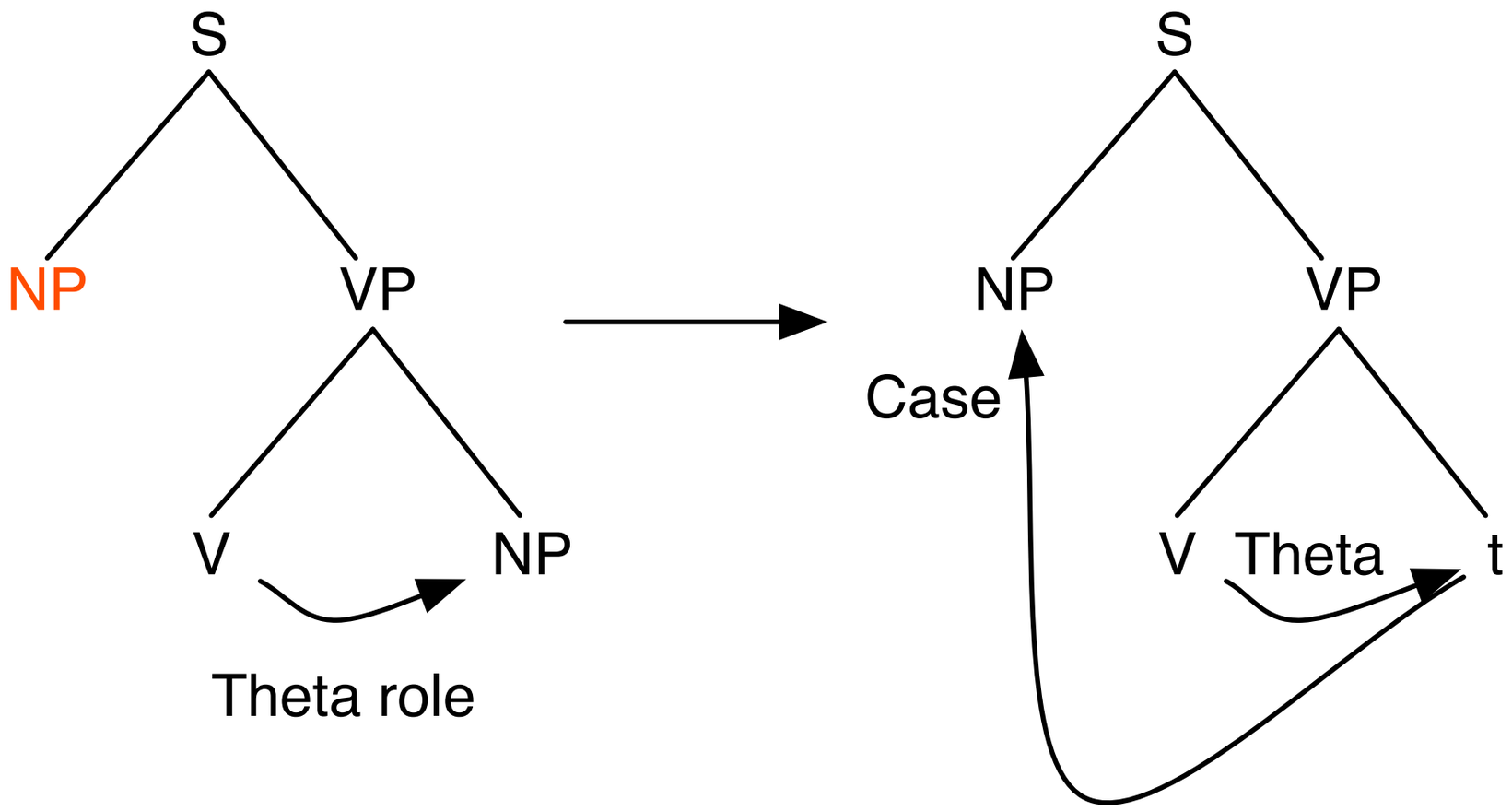
Passive



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Passive

- Passive verbs do not assign case to their direct object, but a theta role.
- Passive verbs do not assign a theta role to an external argument.
- Case is assigned to the external argument position by *finiteness*, not by the verb.
- The direct object needs case (licensing condition), thus *moves* to the subject position.

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Passive

- Passive:
  - The syntactic subject is the semantic object.
- Active:
  - The syntactic subject is the semantic subject...
- but not always...

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Case assignment

- Structural case
  - Nominative and Accusative in structural positions
- Non-structural case
  - e.g. Dative and Genitive, specific for individual verbs, adjectives, prepositions
  - Case preservation with dislocation...

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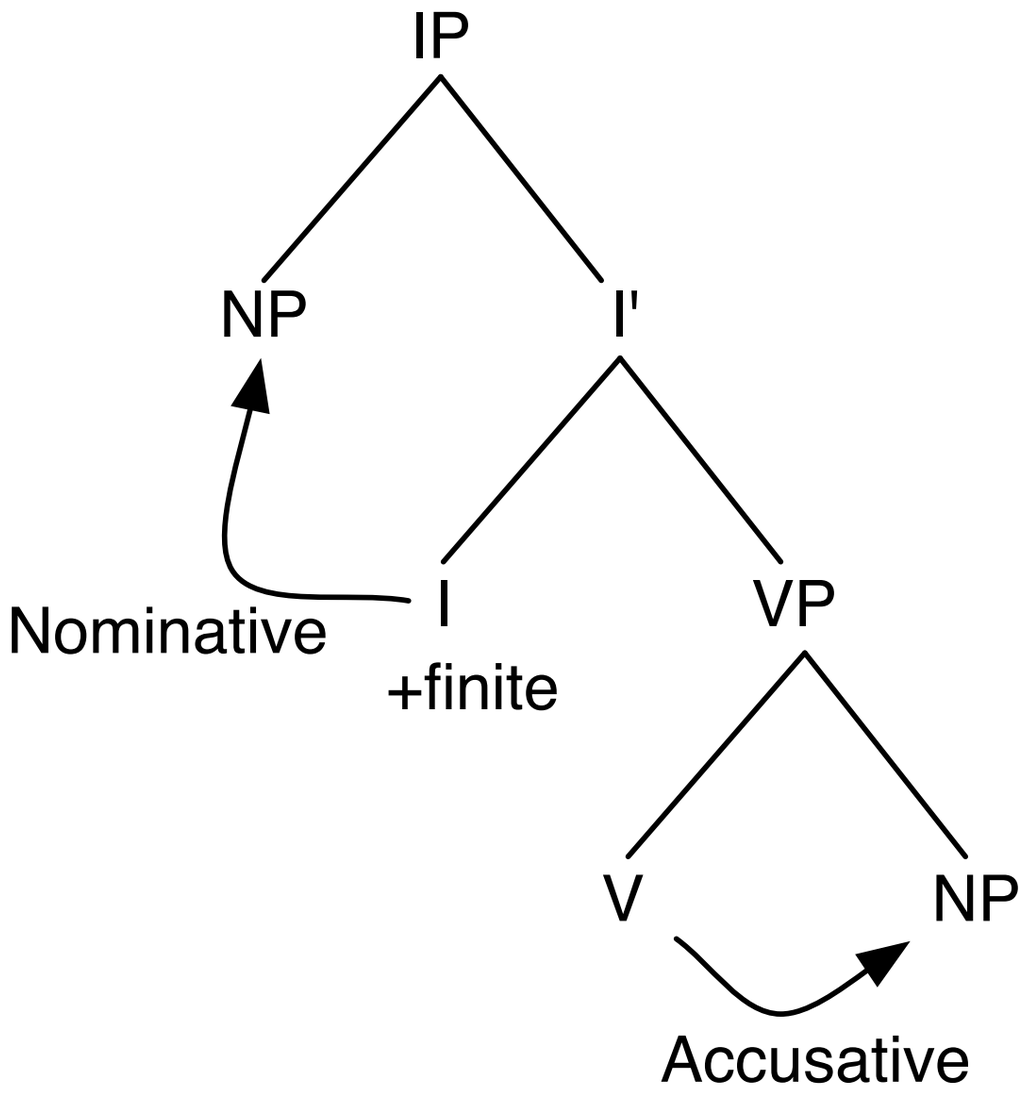
Case assignment



Structural case

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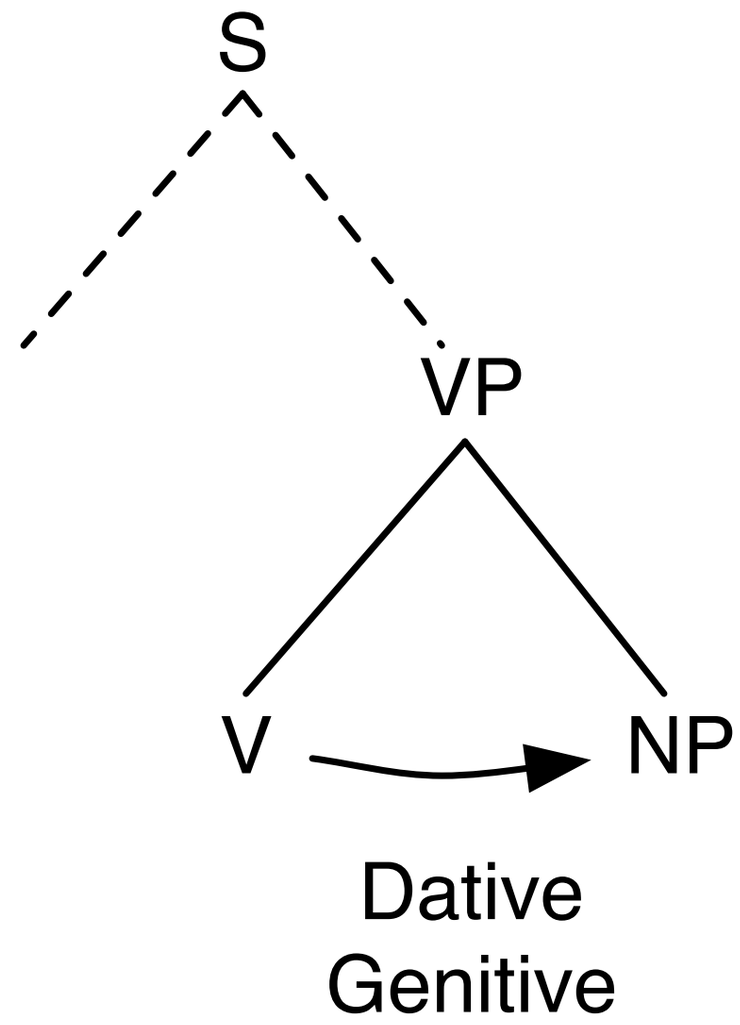
Case assignment



Dative
Genitive

Inherent case

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Summary

- Theta grids, argument structure, valencies
  - need to take into account
    - syntactic (case, structure, categories)
    - semantic
  - information, as well as lexical idiosyncrasies

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Summary

- Theta grids, argument structure, valencies
  - Simple surface phenomena
  - Deep relations and dependencies
  - including syntactic, semantic, and lexical peculiarities and interactions

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Problems

- Judgments are difficult
- Some theoretical concepts are unclear or fuzzy (e.g. Theta roles)
- Difference between Adjuncts and Arguments is unclear

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Argument/Adjunct

- GB
  - structurally defined, and via related theoretical considerations and criteria
- LFG
  - functional distinction
- etc.

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Alternative View

- Theories postulate fixed frames, the reality is more lax
  - Language use differs from idealizations in descriptive or theoretical approaches
- Quantitative properties and contextual variation might have an important impact on synchronic and diachronic aspects of frames and other lexical properties.

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References

Brown, E. Keith, and Jim Miller (1996) *Concise encyclopedia of syntactic theories.* Oxford; New York: Pergamon.

Haegeman, Liliane (1991) *Introduction to Government and Binding Theory.* Oxford: Blackwell.

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Assignment

- What are the structures of:

  in the small town

  ... that John called Mary

  Peter is reading the book.

  under the roof

  The car that she bought last year will be sold tomorrow.

  his big old truck

  with this dirty old rug

  to watch a movie in the cinema

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