

# Government in Dependency Grammar

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Explorations in Syntactic Government and Subcategorization

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## What is dependency grammar?

- 1. Not constituency grammar
- 2. Mother-daughter relation (not a part-whole relation)
- 3. No minimal or intermediate projections
- 4. Minimal structures

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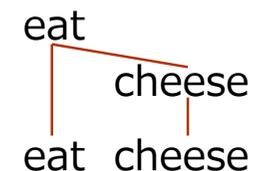
## Not a constituency grammar

- Most prominent grammars are constituency grammars, e.g. GB, MP, HPSG, LFG, CG, CxG, etc.
- Prominent DGs:
  - Richard Hudson's Word Grammar
  - Igor Mel'čuk's Meaning-Text Theory (MTT)
  - Depling 2011 and MTT 2011 in Barcelona
- Many (if not most) computational systems employed to parse natural language and generate treebanks are dependency-based.

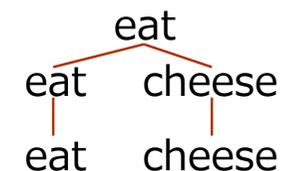
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## Two relations

**Mother-daughter**  
dependency



**Part-whole**  
constituency

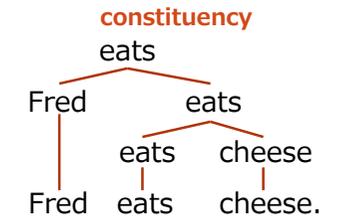


Similar to Chomsky's BPS

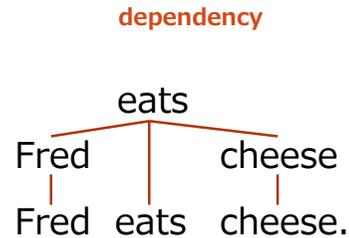
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## Just maximal projections!

Minimal, intermediate, and maximal projections



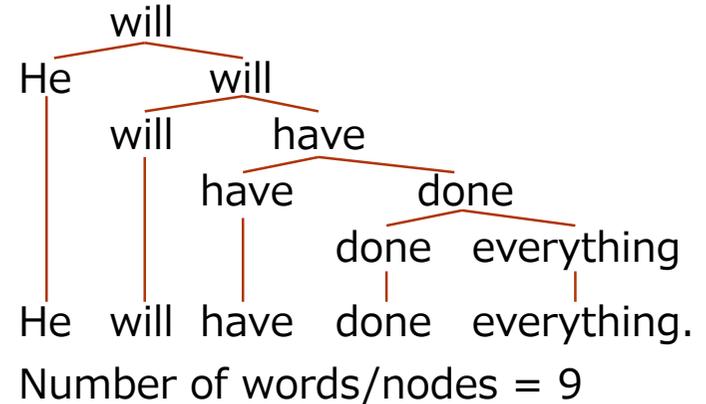
Maximal projections only



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## Much structure!

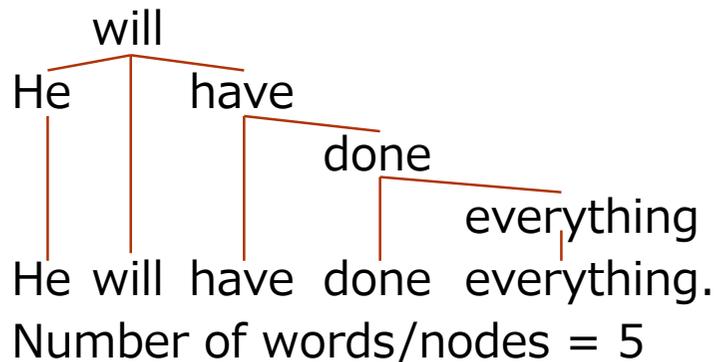
constituency



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## Minimal structure!

dependency



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## Two notions of government in DG

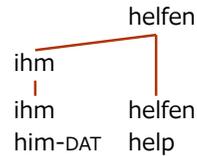
form determination vs. licensing

- **1. Form determination**
- **Zwicky (1985:7):** ...government, speaking rather loosely, is the selection of the morphosyntactic shape of one constituent (the governed or subordinate constituent) by virtue of its combining with another (the governor)
- **Groß (1999:33):** A word constituent  $x$  governs another distinct constituent  $y$  if a morpheme  $\mu^1$  in  $x$  determines a morpheme  $\mu^2$  in  $y$ .
- **2. Licensing**
- **Jung (1995:88):** Government obtains when a dominant element (head)  $A$  opens a slot for a dependent element  $B$ . [Translated from German]

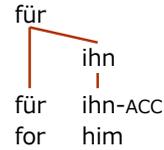
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## Traditional case government form determination points down the hierarchy

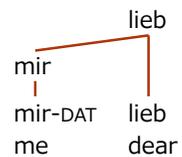
### 1. Verb case governs pronoun



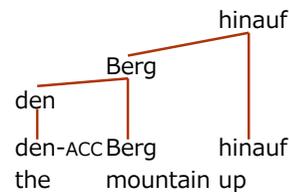
### 3. Preposition governs pronoun



### 2. Adjective case governs pronoun



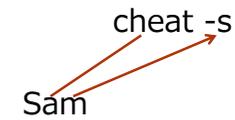
### 4. Adverb case governs pronoun



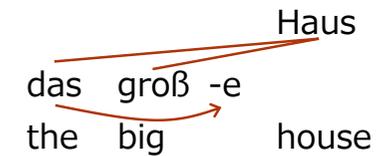
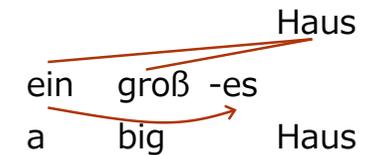
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Form determination also points up and across the hierarchy.

### Subject-verb agreement



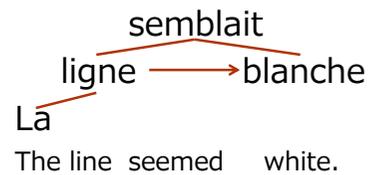
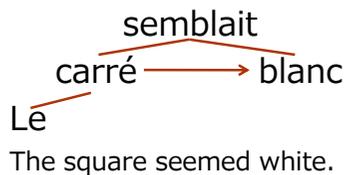
### Adjective endings in German



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Form determination points  
across the hierarchy

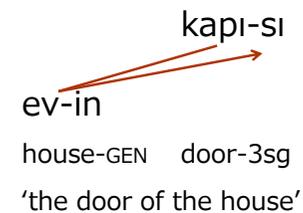
### Predicate adjectives in French



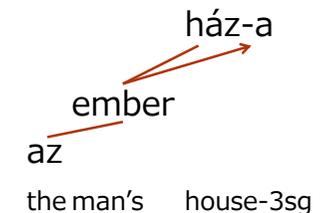
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Form determination points up the  
hierarchy

### Turkish Nichols 1986



### Hungarian Nichols 1986



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## Proforms

across sentence boundaries

### Proforms in all languages

Bill arrived first.



He started right in on the keg.

### Proforms in all languages

Ich mag dein Hemd.



Es ist ganz schön bunt.

I like your shirt.

It is quite colorful.

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## Government in terms of licensing

**Jung (1995:88):** Government obtains when a dominant element (head) A opens a slot for a dependent element B. [Translated from German]

### Terminology:

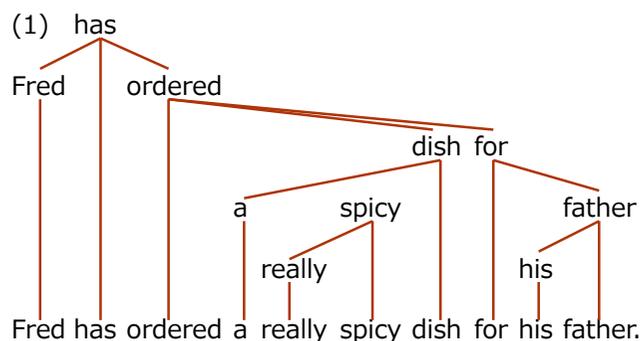
*Regens* (German) = head

*regens* (French) = head

*regent* (English) = head

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## Government in terms of licensing



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## Licensing

Two diagnostics:

1. Omission diagnostic
2. Substitution diagnostic

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## Omission diagnostic

- Given a two-word combination, if one of the two can be omitted from the combination without rendering the encompassing utterance unacceptable, then the remaining word (of the two) governs the omitted word.
- Identifies the hierarchical status of most adjuncts and optional arguments.

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## Adjuncts and optional arguments

- (2) a. Bill works at night.  
b. Bill works.
- (3) a. You stop that!  
b. Stop that!
- (4) a. Tom really understands.  
b. Tom understands.

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## Omission in NPs

- (5) a. The old news is good.  
b. The news is good.
- (6) a. Some people from here resist.  
b. Some people resist.
- (7) a. The milk is good.  
b. Milk is good.

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## Substitution diagnostic

- Replaces a two-word combination with a single word, often a proform. The one word that has more in common with the substitute is the governor of the two-word combination.
- Identifies subject and object NPs as dependents of their verbs.

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## Substitution

- (8) a. The news is good.  
b. It is good.  
c. \* A is good.
- (9) a. She has said that.  
b. She has left.  
c. \* She has this.  
- *has* as auxiliary verb
- (10) a. Tom stayed.  
b. Stay!  
c. \* Tom!

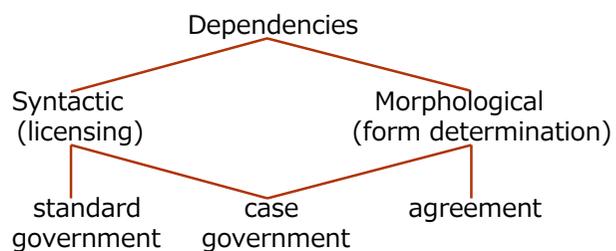
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## The message!

- Government should be defined in terms of licensing.
- The omission diagnostic and substitution diagnostic can help determine the direction of licensing and thus the direction of government
- Form determination, in contrast, is more appropriate for defining agreement.
- Traditional case government is both:  
**Licensing and form determination overlap!**

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## Overview



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**Japanese:  
A dependent-marking language**

## Dependent-marking

Japanese is characterized by predominant dependent-marking. Agglutination makes form-determination visible. The direction of government and form-determination tend to coincide.

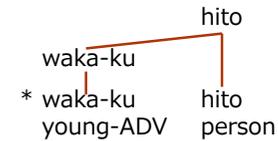
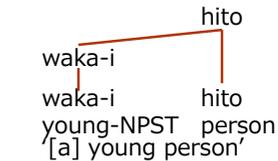
Attributive adjectives, adverbial verbs, and case illustrate the coincidence of government and form-determination.

Objectifiers, volitives, and desideratives exhibit form-determination across structures.

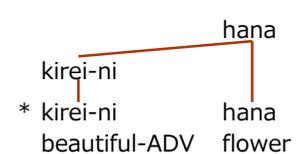
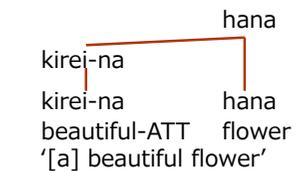
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## Japanese: Attributive adjectives

### 1. Verbal adjectives



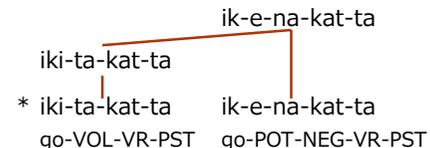
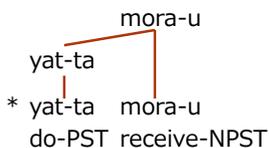
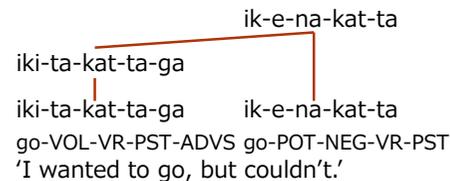
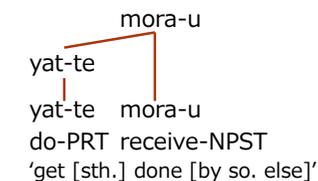
### 2. Nominal adjectives



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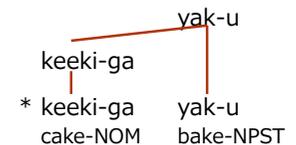
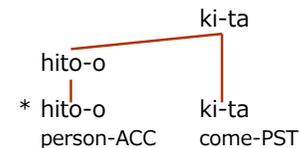
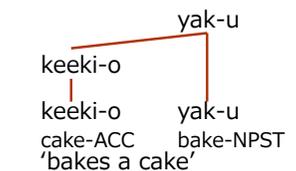
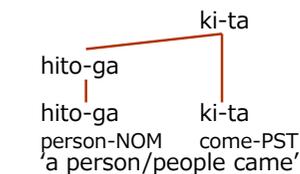
## Japanese: Adverbial verbs

### 1. Participle constructions: 2. Tensed adverbial verbs:



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## Japanese: Case



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## Japanese: Across structures

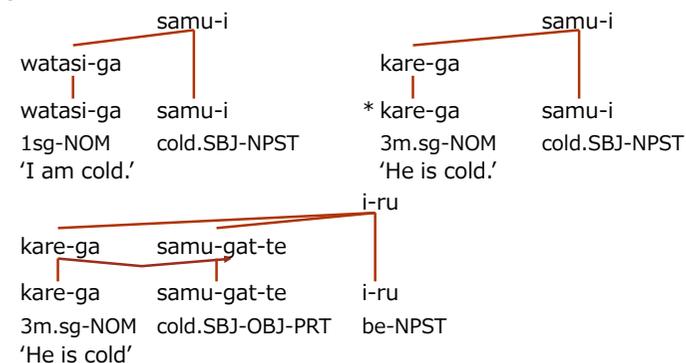
Some Japanese adjectives contain a covert feature **subjective**. Without an objectifying suffix, they can only be used with a 1<sup>st</sup> person subject. Volitives and desideratives are subjective adjectives. The objective suffix *-gar* overrides the valency of the verb, to which it is attached.

2<sup>nd</sup> and 3<sup>rd</sup> person subjects form-determine the objective suffix across the structure.

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## Japanese: Objectification

Certain adjectives are inherently subjective, and require objectifiers in the 2<sup>nd</sup> and 3<sup>rd</sup> person.

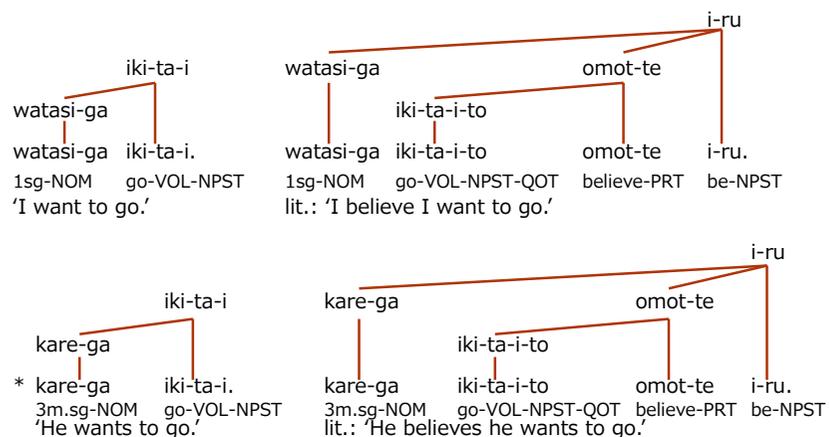


The 3sg pronoun *kare* appears to form-determine the objectifier *-gat* across the structure.

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## Japanese: Volitive construction

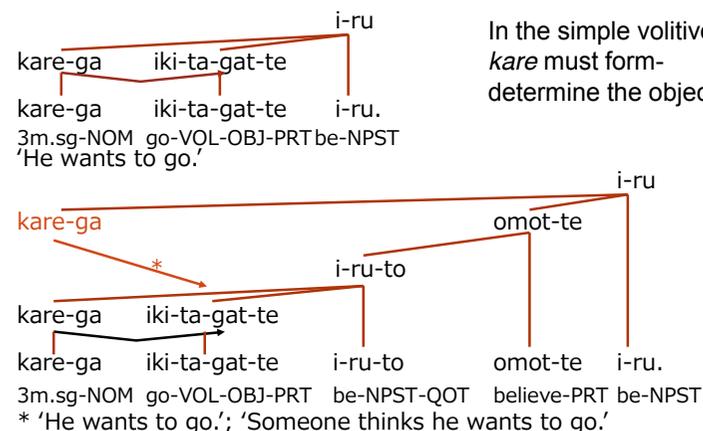
The volitive is formed by the suffix *-ta(-i)*. The volitive construction is VERB-*ta-i-to omo(-u)* 'believe that one wants to do'.



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## Japanese: Volitive construction

In the simple volitive, *kare* must form-determine the objectifier.

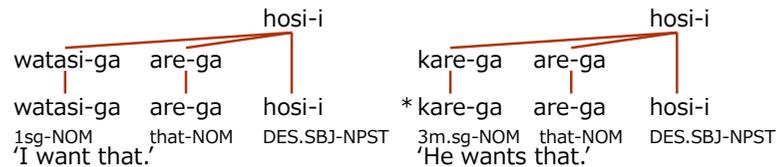


Here *kare* is the subclause subject, and the speaker the matrix subject; alternatively, *kare* is the matrix subject, but fails as the subclause subject. Thus, a volitive construction cannot be formed on an objectified volitive.

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## Japanese: Desiderative

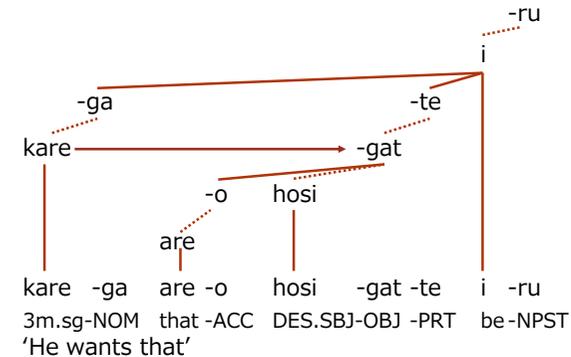
The desiderative is the adjective *hosi(-i)*. This adjective is the only Japanese adjective with a transitive valency. With a 1<sup>st</sup> person subject the object can be marked with the nominative *-ga* (preferred) or the accusative *-o* (in subclauses). A nominative object cannot appear together with a non-1<sup>st</sup> person subject:



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## Japanese: Desiderative

A non-1<sup>st</sup> person subject form-determines the objective suffix, and as a result, the suffix overrides the valency of desiderative *hosi(-i)*. The best way to illustrate this is to grant every morph node status. The dotted edges represent dependencies between morphs. That morph that projects the prosodic word receives the projection edge.



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## Japanese: Summary

Even though form-determination and government tend to coincide, there are instances of form-determination across structures. Objectified volitives and desideratives require form-determination by a non-1<sup>st</sup> person subject.

Since Japanese always morphologically quite complex words, a representation is preferable that allows one to view the relationship between a word-govenee and a morph-governor. Governees may have distinct governors as morphs contained within the same word.

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Thanks for you attention!

Questions welcome