

# AM2 — Syntax: theories and models

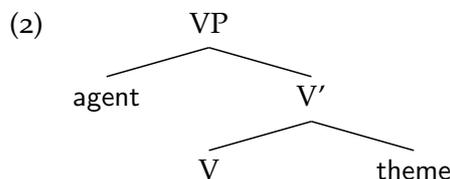
## Week 2: the lexicon-syntax interface

### 1 Argument structure alternations

What is the relation between a verb and its arguments? For a long time, the standard assumption was that verbs carried information about the set of arguments that they accepted. In transformational grammar, this was encoded as the *theta-grid*, which is simply a list of the arguments and their thematic relations with the verbal head. The theta-grid for *eat* would be as follows:

- (1) *eat*  $\left[ \begin{array}{l} \text{theme : NP} \\ \text{agent : NP} \end{array} \right]$

This assumption also existed in alternative theories of syntax, under different implementations. For example, Categorical Grammar (CG) defines *eat* (and transitive verbs in general) as (NP/S)\NP items —i.e., items that take an NP on their right hand side and turn into something that takes another NP on its left hand side and turns into a S(entence). This way of representing argument structure implied a relatively simple syntax for VPs, namely:



However, a single verb can support a number of different argument configurations. For example, some transitive verbs like *to break* are subject to the *transitive-unaccusative* alternation.

- (3) Alice broke the bottle  $\Leftrightarrow$  The bottle broke.

There is also ubiquitous passive alternation.

- (4) Alice broke the bottle  $\Leftrightarrow$  The bottle was broken (by Alice).

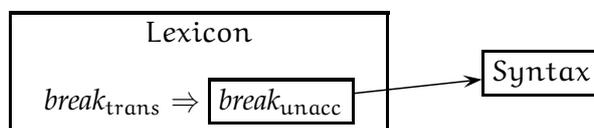
Most verbs also allow a *middle* form, which requires the presence of a manner adverb.

- (5) These bottles break ??(easily).

Finally, some ditransitive verbs support the *spray-load* alternation, so called because the verbs usually employed to illustrate it are *spray* and *load*

- (6) a. They sprayed paint on the wall  $\Leftrightarrow$  They sprayed the wall with paint.  
b. They loaded hay on the truck  $\Leftrightarrow$  They loaded the truck with hay.  
c. They embroidered peace signs on the flag  $\Leftrightarrow$  They embroidered the flag with peace signs.

Earlier theories assumed that these alternations were derived in the Lexicon. Note that this requires a different kind of Lexicon than the one we are adopting in this class. For us, the Lexicon is simply a repository of lexical items (*qua* pre-built sets of features), and nothing else. However, if we want to say that argument structure alternations are lexically derived, then we need to say that the Lexicon includes a class of rules that, among other things, can take *break*<sub>transitive</sub> and turn it into *break*<sub>unaccusative</sub>.



In this and the following classes, we are going to see that we actually need a more articulate syntax in order to accurately capture certain facts about argument structure. The evidence will come mainly from two fronts: (i) denominal verbs; and (ii) properties of subjects. The end result will be a surprising analysis of verbs. Unlike in previous approaches, verbs are not going to be atomic constituents stored as such in the lexicon; rather, they are going to be syntactically constructed from various subcomponents.

## 2 Denominal verbs

A denominal verb is a verb constructed on a nominal basis —e.g., *to shelve* (= ‘to put something on a shelf’), *to saddle* (= ‘to put a saddle on a horse’), and so on. The fundamental observation of Hale and Keyser (1993) is that these verbs are subject to a number of constraints. For example, one can’t construct a denominal verb on the basis of the subject of a structure.

- (7) a. \* It cowed a calf [‘a cow had a calf’]  
 b. \* It dusted the horses blind [‘the dust made the horses blind’]  
 c. \* It machined the wine into bottles [‘a machine put the wine into bottles’]

Similarly, one cannot strand the prepositions associated to the noun phrase the verb is constructed from.

- (8) a. \* He shelved the books on.  
 b. \* He corraled the horses in.  
 c. \* He bottled the wine in.

Finally, if we start from a ditransitive verb, we cannot construct a denominal verb from the indirect object.

- (9) a. \* They housed a coat of paint. [= they gave the house a coat of paint]  
 b. \* He bushed a trim. [= he gave the bush a trim]

Hale and Keyser write that “if denominal verb formation were [...] simply a process of category change, then the range of possible denominal verbs would be expected to include verbs of the sort exemplified in (7)–(9)”. Since these classes of verbs don’t exist, they conclude that there must be an extra factor regulating which denominal verbs are licit. Their proposal is that this extra factor is syntax, specifically the restriction known as the *Empty Category Principle* (ECP).

- (10) *Empty Category Principle*  
 An empty category (notated [e]) must be properly governed. [e] is properly governed by a iff

(11) *Proper Government*

An antecedent *a* properly governs an empty category [e] iff:

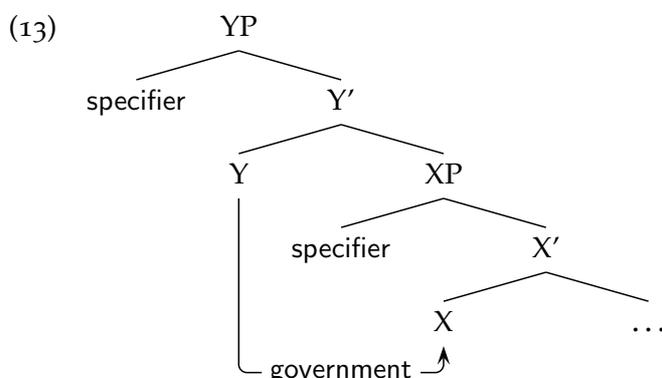
- a. *a* c-commands [e], and
- b. there are no barriers between *a* and [e], and
- c. there is no potential governor *b* such that *a* c-commands *b*.

We don't need to worry about what "barriers" and "governors" are (but if you are interested, you should read Chomsky 1986, *Barriers* and Rizzi 1990, *Relativized Minimality*, both published by MIT Press). The result that is of interest to us is the following, which has been codified as the *Head Movement Constraint* (HMC).

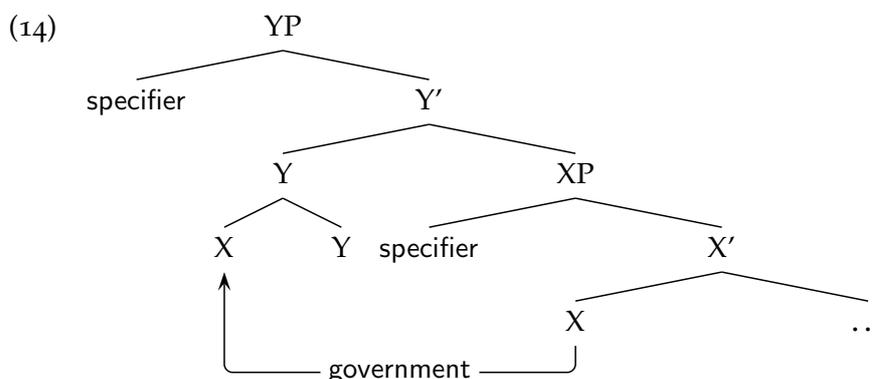
(12) *The Head Movement Constraint*

A head *X* may only move to the head *Y* that properly governs it.

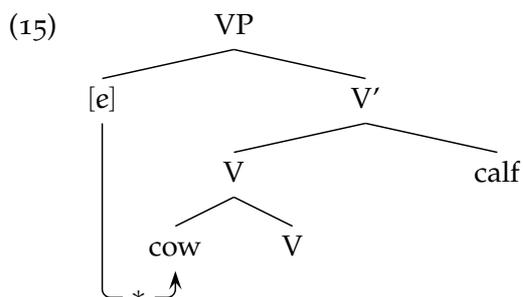
The only head that a head *Y* properly governs the head of its complement *XP*, which we can represent graphically as follows.



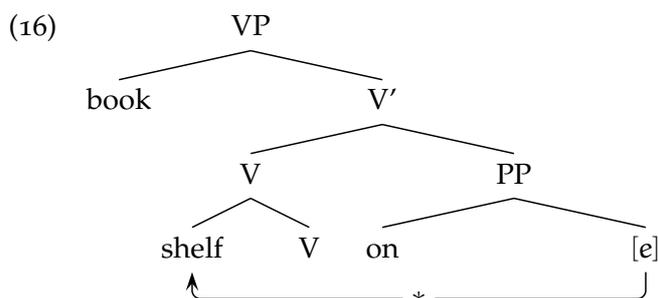
This means that the only possible head movement is as follows (note that moving heads always adjoin to the *left* of their host; this is known as the *Mirror Principle*).



If the creation of denominal verbs is constrained by the HMC, then the restrictions above follow from the fact that we are performing illicit head movement operations. For example, in (3) and (5), we would need to perform downwards movement of the subject or indirect object into the V head. This is bad because the governor (the V head) doesn't c-command [e].



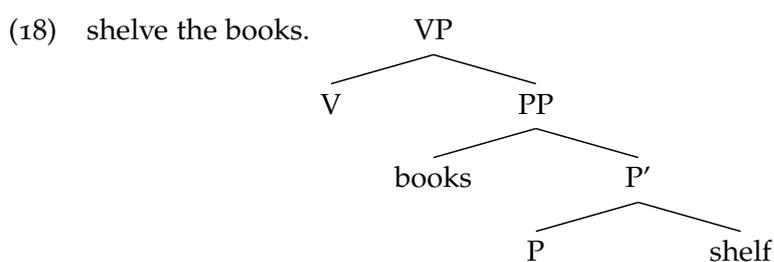
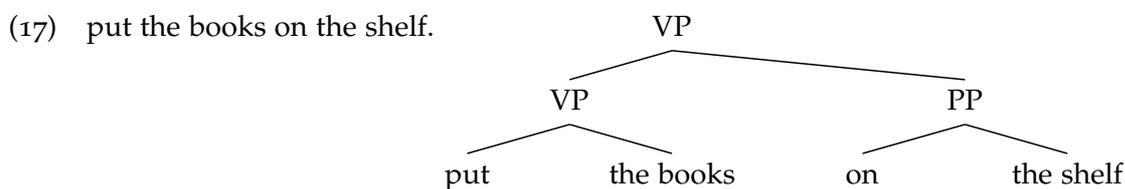
Similarly, you can't strand a preposition associated to the nominal you construct the verb from (4), because that would require head movement to skip an intermediate head.



However, incorporation of a nominal object into its selecting verb is fine: the verb c-commands the object, and there is no intermediate potential governor or Barrier, so the verb can properly govern the [e] left by movement of the object.

### 3 Consequence

Assume then that Hale and Keyser are correct in saying that thematic relations are syntactically constrained. Now look again at tree (12). What is exactly the V head that *shelf* moves to? We want to call it a verb, but it's not a verb like the ones we are used to. Hale and Keyser's proposal is that this is not a lexical verb, but a semantically very simple head whose function is to express a spatial/thematic relation between two constituents —in this case, *book* and *shelf*. More specifically, Hale and Keyser are not saying that *shelve the books* is literally derived from *put the books on the shelf*. There is no *on* preposition in the latter case, just a functional head that expresses the locatum-location relation.

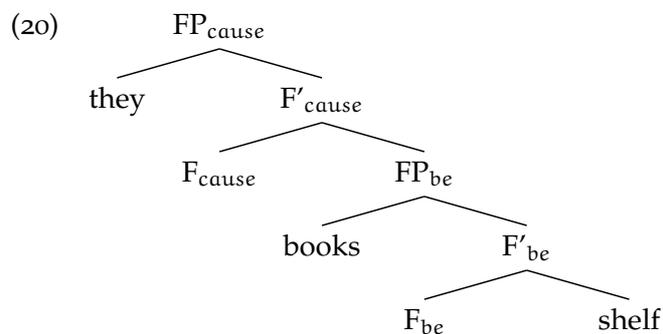


However, in a sense, all we have done is push the problem upwards. Now we have some understanding of what the functional head P between the locatum and the location is, but we still have a mystery V selecting the PP. This V can't be a regular verb like *put* or *place*, because then we would expect examples like the following to be grammatical.

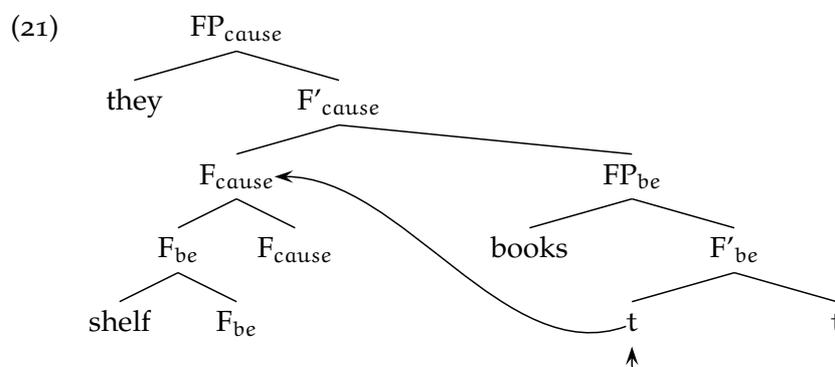
- (19) a. \* He put the books shelve.
- b. \* He put shelve the books.

So we have to say that this V is not a regular verb either. Hale and Keyser's proposal is that this is another functional head that instantiates a causation relation between the lower PP (which itself expresses a location relation) and the external argument of the sentence. We can

use labels like CAUSE and BE to make these relations more transparent. If we do this, then we get the following structure for *they shelved the books* (I'm using the label F(unctional head) instead of P and V to emphasize the fact that these heads are not really verbs or prepositions as we normally think of them).



Then, by a sequence of head movements, the noun *shelf* is joined with  $F_{be}$  and  $F_{cause}$ . The whole constituent  $[[shelf F_{be}] F_{cause}]$  is spelled out as the verb *shelve*.



But now we have a verb that is not a lexical item! It is a *combination* of lexical items that have been put together in syntax, and then spelled out through a single vocabulary item, namely, *shelve*. If this analysis holds (and we will see that it does), then we have an argument in favor of the following two statements.

- Thematic relations are syntactically expressed, and therefore they ought to obey syntactic principles.
- What we normally call “verbs” are not atomic lexical items; rather, they are combinations of lexical items put together in syntax.

## 4 Why lexical decomposition

The idea that some lexical items are in reality composite elements is called *lexical decomposition*. This is a fairly old idea, as it was popularized by the Generative Semantics (GS) framework in the 1970s. However, GS people argued that lexical decomposition was an entirely semantic phenomenon —i.e., they argued that *to shelve the books* had a semantic representation more or less close to that of *cause the books to be on the shelf*, but simultaneously they argued that the syntactic representation consisted of an atomic lexical item *shelve*. In contrast, Hale and Keyser’s argument is that lexical decomposition is a syntactic phenomenon (from which it follows that it is also semantic). There are a number of arguments in favor of Hale and Keyser’s view, some of which follow.

#### 4.1 Modification of subparts of verbs

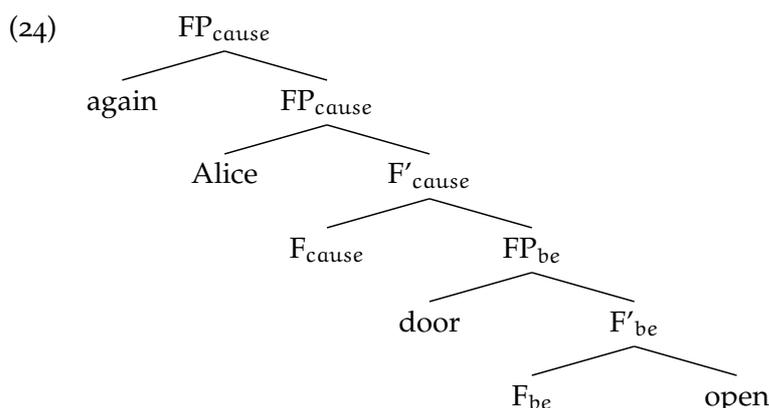
Last week, we saw that the relation between lexical items and vocabulary items is not always one-to-one. Sometimes a vocabulary item can spell out more than one lexical item, as is the case with German *kein*, which realizes *nicht* and *ein*. We can make a similar argument with certain verbs that involve causation and a result state —prototypically, *open* and *close*. The argument revolves around the two possible readings of this example.

- (22) Alice opened the door again.
- Repetitive reading*: Alice opened the door this morning, but then someone closed it. Then she came back and opened it again.
  - Restitutive reading*: The door was open when Alice arrived. Someone else closed it, but she then went and opened it again.

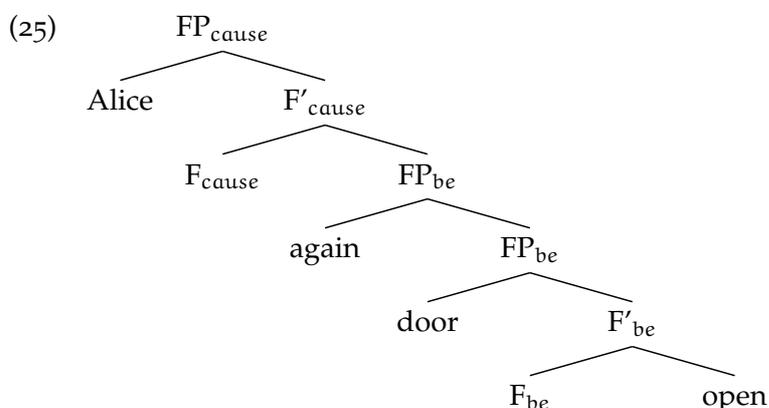
Both readings exist also in German, with *wieder* although they correlate with different word orders (von Stechow 1996).

- (23) a. ...dass Arnim die Tür wieder öffnete. [repetitive/restitutive]  
 b. ...dass Arnim wieder die Tür öffnete. [repetitive only]

Assume that *open* can be decomposed as [ $F_{\text{cause}}$  the door  $F_{\text{be}}$  open]. In the repetitive reading, *again/wieder* modifies the part of the structure that contains both  $F_{\text{cause}}$  and  $F_{\text{be}}$ .



However, in the restitutive reading, *again/wieder* modifies only the part of the structure containing only  $F_{\text{be}}$ . The reading can be paraphrased as “Alice caused something to happen, and that the door being in the open state for a second time.”



## 4.2 Argument from typology

This argument relies on the assumption that *give* can be decomposed as [F<sub>cause</sub> someone F<sub>have</sub> something]. The crucial part is that the lower part of the structure is headed by a HAVE relation, rather than BE. Harley (1995) then makes the following crosslinguistic generalization.

(26) *Harley's Generalization*

If a language doesn't have a *have* verb to express possession, then it doesn't have a double object construction for *give*. Transfer of possession has to be expressed through a prepositional dative construction.

For example, German and English have *haben* and *have*, and they also have *geben* and *give* verbs that allow double object constructions as well as prepositional dative constructions.

- |      |   |      |   |
|------|---|------|---|
| (27) | a. Alice gave Eve a book.<br>b. Alice gave a book to Eve. | (28) | a. Anna gab ihm das Buch.<br>b. Anna gab das Buch an ihm. |
|------|---|------|---|

However, Irish doesn't have a verb *have*: in Irish, possession is expressed through a locative-like structure.

(29) *Irish*

- |    |  |              |
|----|--|--------------|
| a. | Tá an mhin sa phota.<br>BE the oatmeal in pot<br>"The oatmeal is in the pot" | [locative]   |
| b. | Tá an peann ag Máire.<br>BE the pen at Máire.<br>"Máire has the pen"         | [possessive] |

As a consequence, Irish only allows the prepositional dative construction, not the double object construction.

- |      |   |                |
|------|---|----------------|
| (30) | a. Thug Míleó caisearbhán do Bhinclí.<br>gave Milo dandelion to Binkley<br>"Milo gave a dandelion to Binkley" | [prep. dative] |
| b.   | * Thug Míleó Bhinclí caisearbhán.<br>gave Milo Binkley dandelion<br>"Milo gave Binkley a dandelion"           |                |

We will see in an upcoming class that the double object and prepositional dative constructions have slightly different meanings. A double object construction implies transfer of *possession*, and so it requires an underlying HAVE that expresses possession. In contrast, prepositional datives convey transfer of *location*, and can be constructed without an underlying HAVE.