5.0 Pure morphology

- Morphology concerns the makeup of those segments of language that we call words.
- The word *word* is multiply ambiguous:
  - the atoms of syntax (syntactic words)
  - phonological stretches defined in terms of allowable initial and final sequences of segments and intonational properties (phonological words)
  - the smallest elements that can be pronounced as whole utterances (discourse words)
  - contiguous stretches of utterances with meanings that cannot be derived from shorter components (semantic words)

- Morphology is an autonomous component with its own categories and its own rules of combination, just as is the case with the other autonomous components of grammar.
- Morphology must be sharply distinguished from morphophonology and morphosyntax.
- formalized in terms of an order-free, context-free phrase structure grammar
- Morphology is a grammar of word structure and only deals with productive morphological facts.
- Lexicalized morphology belongs in the lexicon.

- two basic morphological categories
  - morphological word (<BAR, 1>)
  - sub-word category: stem (<BAR, 0>)

- Five morphological operations
  - operations that produce stems when applied to stems
    - derivation
    - \[X[0] \rightarrow Y[0], Af\] (cf. Sadock 1991: 28-29)
  - operations that produce words when applied to stems
    - inflection
    - \[X[1] \rightarrow X[0], Af\]
  - operations that produce words when applied to words
    - cliticization
    - \[X[1] \rightarrow Y[1], Af\]
  - operations that produce stems by joining two stems
    - compounding
    - \[X[0] \rightarrow Y[0], Z[0]\]
    - In some compounds, \[X[1]\] (full word, not stem) appears.
      - communications strategy, community services committee
      - Frauenhut, Liebesbrief, Wörterbuch
  - operations that produce stems when applied to words (Crow, Finish, Turkish, Inuit)
    - \[X[0] \rightarrow Y[1], Af\]
Morphological categories are in principle distinct from syntactic categories.

(7) *lizard*  
syntax: N  
morph: N[0]

(8) *take*  
syntax: V in [ __, NP]  
morph: V[0]

➢ Where there is no mismatch between syntactic category and morphological category (default case), either one can be omitted from the lexical entry.

(7’) *lizard*  
syntax: N  
morph: <BAR,0> (i.e., stem)

(8’) *take*  
syntax: V in [ __, NP]  
morph: <BAR,0>

idiomatic *bitch*

I’ve had a bitch of a week at work. cf. I’ve had a difficult/unpleasant week at work.
“…in order to get involved with that bitch of a war on the other side of the world…” (LBJ)

I love that silk dress, but it’s a bitch to wash.

These milk cartons are a real bitch to open.

syntax: N[SG] in [ __, (PP[of]), [ __, VP[to]] (tough construction)  
F/A: F_a  
RS: TYPE in [EVENT __ PAT]  
morph: N[1]

5.1 Morphophonology

➢ Morphophonology deals with the phonological realization of morphological processes.

➢ must be kept clearly separate from pure morphology.

➢ Is phonology (phon) (with its interface with morphology) enough to deal with phonological realization of morphological processes?

➢ English regular verbs

(12) *trade*:

syntax: V in [ __, NP, PP[for]]

F/A: F_aaa  
RS: TYPE “trade” in [ __ AGT PAT ANC]  
morph: V[0]
phon: /trejd/

➢ Regular inflectional rules with productive morphophonology will apply to this stem.

\[
\begin{array}{c}
V[1, BSE] \\
\downarrow \\
V[0] \\
\downarrow \\
Af \\
/ɪŋ/
\end{array}
\]
English irregular verbs

- An irregular verb like *sing* needs to have its stem and irregular forms listed: V[0], V[1, PAST] and V[1, PST-P]
- These listed forms block the more general regular rules (Elsewhere Principle).

(13) *sing:*

syntax: V in [ __, (NP)]
F/A: F_{(a)n}
RS: TYPE “sing” in [ __ AGT (PAT)]
morph: V[0] V[1, PAST] V[1, PST-P]
phon: /sɪŋ/ /sæŋ/ /sʌŋ/

Some irregular verbs have two V[1, PAST] (and V[1, PST-P]) forms: one is an irregular form and the other is a regular form. With these verbs, both regular and irregular forms must be listed. (cf. Jackendoff 1997: 230 note 4)

<table>
<thead>
<tr>
<th>V[0]</th>
<th>regular V[1, PAST]</th>
<th>regular V[1, PST-P]</th>
<th>irregular V[1, PAST]</th>
<th>irregular V[1, PST-P]</th>
</tr>
</thead>
<tbody>
<tr>
<td>dream</td>
<td>dreamed</td>
<td>dreamt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>learn</td>
<td>learned</td>
<td>learnt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>burn</td>
<td>burned</td>
<td>burnt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bust</td>
<td>busted</td>
<td>bust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>awake</td>
<td>awaked</td>
<td>awoke</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Morphological structures of past and past participle forms of *dream*
5.2 Morphological processes

Morphological processes make simultaneous alterations in more than one field of a class of lexical entries to yield other lexical entries.

(14) Agentless Passive (English) for NP object:

syntax: \( V \text{ in } [\__, \text{NP}, \psi] \)  \( \Rightarrow \)  \( V[\text{PSV-P}] \text{ in } [\__, \psi] \)

F/A: \( F_a \)  \( \Rightarrow \)  \( F_a \)

RS: \( TYPE \text{ in } [\text{EVENT } \text{AGT } \text{PAT } \chi] \)  \( \Rightarrow \)  \( TYPE \text{ in } [\text{EVENT } \text{<<AGT>> PAT } \chi] \)

morph: \( V[0] \)  \( \Rightarrow \)  \( V[1, \text{PST-P}] \)

The syntax of the past participle and the passive participle are clearly different. Passive participles must therefore be distinguished in the syntactic component.

At the same time, the morphology (and based upon it, the morphophonology) of the past and passive participles are always the same.

**English agentive nominalization**

- Lexical entry for *reader* with an optional complement PP[of]

  syntax: \( N[\text{SG}] \text{ in } [N', \_\_ , (\text{PP[of]})] \)

  F/A: \( \text{Arg}_a \) (\( \text{Arg}_a \) = F/A entity that takes one argument to be an argument)

  RS: Role (the role is determined by the verb that heads the sentence in which the agentive noun appears)

  morph: \( [N[0] \text{ V}[0], [\text{F/A} \text{person}] \downarrow] \)

  LS: \[
  \begin{align*}
  \text{PERSON} \\
  \text{AGT in } [\text{EVENT } \text{TYPE } \text{“read” AGT PAT }] \\
  \end{align*}
  \]

  (LS for lexical semantics)

  The F/A category \( \text{Arg}_a \) is needed anyway to deal with such nouns as *father (of)*, *friend (of)*, and *professor (of)*.

  Mary met the reader of the *Tribune*.

- modifier

  - a fast reader (*fast* modifies “read” in LS)

  - a Japanese reader (*Japanese* modifies PERSON in LS)
(16') Agentive Nominalization (lexical rule)

\[
\begin{align*}
\text{F/A: } & F_a \rightarrow \text{Arg}_a, \\
\text{RS: } & [\text{EVENT TYPE AGT } \chi] \rightarrow \text{[N[0] V[0]} \text{, Af]} \quad \text{(derivational affix)} \\
\text{morph: } & V[0] \rightarrow [\text{[N[0] V[0]} \text{, Af]} \quad \text{(derivational affix)} \\
\text{phon: } & /\psi/ \quad /\sigma/ \\
\text{LOC: } & \alpha \ll [\text{suffix}] \\
\text{LS: } & \begin{cases} 
\text{PERSON } \\
\text{AGT in \text{EVENT} } \\
\end{cases} \quad \text{(EVENT comes from the RS of the base verb)}
\end{align*}
\]

- ambiguity in a beautiful dancer (note 3)

The adjective beautiful can modify either PERSON in the LS or TYPE “dance” of the Event in the LS.

- a beautiful person who dances
- a person who dances beautifully (i.e., in a beautiful manner)

- the LS of dancer (cf. Jackendoff’s Lexical Conceptual Structure; Generative Lexicon)

\[
\begin{align*}
\text{PERSON } \\
\text{AGT in \text{EVENT \text{‘dance’ AGT}}} \\
\end{align*}
\]

- The agentive noun dancer (as an NP) can bear any role in a sentence in which it appears, as is shown below. However, in the LS field, it is specified as the agent of a dancing event.

- Dancers are praised when they dance beautifully. (AGT of the dancing event in the LS field but PAT in the praising event described by the sentence)
- People give money to dancers if they dance beautifully. (AGT of the dancing event in the LS field but ANC in the giving event described by the sentence)

- AGT is a proto-agent covering instrument, experiencer, and stimulus (Cruse 2011:346) (cf. ch3)

  instrument: computer, printer
  experiencer: hearer, viewer
  stimulus: soother, thriller, shocker

- complement inheritance

  - An NP object of a transitive verb will be a PP[of] complement of the derived agentive noun.
  - When the base verb takes a PP complement, the derived agentive noun will take the same PP complement.
  - When the base verb takes an PP[of] complement in addition to an NP object, two PP[of] complements are impossible.

  - strip rooms of furniture \(\rightarrow\) *a stripper of rooms of furniture
  - heal people of diseases \(\rightarrow\) *a healer of people of diseases
  - CP, VP[to], and PP complements are inherited but AP complements cannot.
  - paint houses white \(\rightarrow\) *painter (of houses) white/ *painter white of house

- The patientive noun interviewee (as an NP) can bear any role in a sentence.
  
  \[\text{[AGT Interviewees] expressed their opinions.}\]
  
  \[\text{John gave a list of questions to [ANC interviewees].}\]
(16’’) Patientive Nominalization (lexical rule)

\[
\begin{align*}
F/A: & \ F_{\text{an}} \\
RS: & \text{[EVENT TYPE AGT PAT } \chi] \\
morph: & V[0] \\
\rightarrow & \text{Arg} \\
\text{(no output for the RS field)} \\
\text{morph: } & V[0], \text{ Af] } \\
\text{phon: } & /\psi/ /i:/ \\
LOC: & \alpha < \beta \\
LS: & \begin{cases} \text{PERSON} \\ \text{PAT in EVENT} \end{cases} \quad \text{(EVENT comes from the RS of the base verb)}
\end{align*}
\]

F/A of (17) a. Every dancer falls.

\[
\begin{aligned}
\text{F/A of (17) a. } & \text{Every dancer falls.} \\
\end{aligned}
\]

\[
\begin{aligned}
\text{\textbf{Prop} } \\
\text{QP[x]} & \quad \text{Prop[x]} \\
\text{Q} & \quad \text{Prop[x]} \quad \text{Arg[x]} \quad F_{a} \\
\text{EVERY} & \quad \text{x} \quad \text{FALL} \\
\text{Arg[x]} & \quad F_{a} \\
x & \quad \text{Arg} \quad F_{aa} \\
\text{DANCER} & \quad \epsilon
\end{aligned}
\]

◆ “wh-movement” (by the PS strategy) \text{\textcolor{red}{top} + middle + bottom}

(1) Which newspaper does Mary read?
Dominance path in F/A: \text{Prop Prop[x] } F_{a}[x] \text{ Arg[x]}

(2) Which newspaper is Mary a reader of?
Dominance path in F/A: \text{Prop Prop[x] } F_{a}[x] \text{ Arg Arg[x]}

Which program does Mary listen to?
Which program is Mary a listener to?

5.3 Feature Osmosis

◆ An important principle of automodular grammar is that categories tend to match across different dimensions of grammar (cf. Chapter 2, section 2.2).

- The syntactic nouns are those elements that in a given language serve as the heads of NPs.
- The morphologically defined noun is an element that is subject to certain derivational and inflectional processes.
- The two definitions often correspond, but not always.

◆ In the unmarked situation, there will be a correspondence between categories of the morphology and categories of the syntax and vice versa.

◆ The general default can be formalized as in (19).
(19) Feature Osmosis
Let $F_1$ be the set of features in dimension $D_1$ and $F_2$ be the set of features in dimension $D_2$.
Then there is a one-to-one correspondence between $F_1$ and $F_2$.

5.4 Clitics
◆ Morphological clitics are functions from morphological words to morphological words.

$$W (= \langle BAR, 1 \rangle) \text{ in morphology}$$

$$\begin{array}{c}
  W \\
  \text{Cl} \\
  \downarrow \alpha < << \beta \\
  \text{in LOC}
\end{array}$$

- Linear adjacency is required between a clitic and a word that it attaches to.
- A clear example is the English possessive clitic.

- the English possessive clitic
  - a phrasal affix: a morphophonological suffix that follows a noun phrase in the syntax

**possessive**

◆ lexical entry for the determiner *my*
  syntax: Det
  (LOC: [NP Det << N’])
  F/A: [Ma [Fa [Arg PRO, 1, SG] [Faa IN.RELATION.TO]]]

◆ lexical entry for the argumental (i.e., pronoun) *mine*
  syntax: NP[3] (third person; no specification for number and gender)
  F/A: [Arg [Arg PRO] [Ma [Fa [Arg PRO, 1, SG] [Faa IN.RELATION.TO]]]]

◆ lexical entry for the predicate *mine*
  syntax: NP in [VP [v be] ]
  F/A: [Fa [Arg PRO, 1, SG] [Faa IN.RELATION.TO]]

*My books have arrived.*

My books have arrived.
Mine have arrived. (argumental mine)

That dog is mine. (predicative mine with be-verb) ‘That dog belongs to me’

{A/Every} book of mine has arrived. (of mine = my in F/A)
[Det Whose] book has arrived?

My every book has arrived.
Whose every book has arrived?

This book is John’s.

{s (predicate NP[POS] as in This book is Jonh’s)
F/A: [Fa Arg [Faa IN.RELATION.TO]]
syntax: [VP [v be] [NP[POS] NP, CL]]
LOC: α << β
morph: [w W CL]
phon: {z}

This book is John’s.
's (determiner NP[POS] as in *John's book arrived*)
cf. John’s book = the book that belongs to John
F/A: [Ma [Fa Arg [Faa IN.RELATION.TO]]]
syntax: [Det [NP[POS] NP, CL]]
LOC: α << β
morph: [w W CL]
phon: {z}

S[PAST]
NP VP[PAST]
| | Det N’ V[PAST] arrived
| NP[POS] N
NP CL book
NP CL
John ‘s

Prop
Fp PAST
Arg Fa ARRIEVE
Arg Ma
BOOK
Arg Faa Fa
JOHN I.R.T.

‘s (argumental NP as in *John’s arrived*)
cf. Mary’s books have arrived and John’s have, too.
F/A: [Arg [Arg PRO] [Ma [Fa Arg [Faa IN.RELATION.TO]]]]
syntax: [NP [NP[POS] NP, CL]]
LOC: α << β
morph: [w W CL]
phon: {z}

S[PAST]
NP NOM VP[PAST]
NP POS V[PAST] arrived
| NP CL
| John ‘s

Prop
Fp PAST
Arg Fa ARRIEVE
Arg Ma
PRO
Arg Faa Fa
JOHN I.R.T.
three lexical entries (NP[POS] as predicate, determiner, and argument) for the possessive clitic

- The shared information is captured as follows by inheritance hierarchy of lexical information (cf. Pollard and Sag 1987 Ch8 and 1994; Sag, Wasaw and Bender 2003 Ch16)

![Diagram of lexical entries and their hierarchy]

I read *the professor of English’s new book*.

- **[PP[of] of NP[POSS]]** is required to be adjacent to the head of an N’ which it modifies.

(YUok?) Here is an interesting fact from a book of Jim’s about English.

(YU*) Here is an interesting fact from a book about English of Jim’s.
I saw [a book of [NP[POS] John's]].

(22b)

5.5 Incorporation

- An important kind of morphology-syntax mismatch

(30) Incorporation

Syntax head + head

Morphology [Z₀] X[0], Y[0] (Stem → Stem, Stem)

- English –ing nominalization of verb + particle involves incorporation?
  - a [S, breaking down] of traditional barriers
  - a [S, breaking away] of the object from the surface
5.6 Tense and Auxiliaries in English

- Tense is NOT a syntactic category but encoded on verbs as verb form feature.
- Tense is ordinarily realized as an inflection on verbs.

5.6.1 Tense

- The term “tense” is multiply ambiguous
  - the semantic category of tense that relates the time of a described event to some reference point,
  - the morphological category that is required in order to transform a verb stem into a full, inflected, morphological word
  - the phonological substance that indicates a category of verbal morphology

5.6.2 The semantic category of tense

- Semantic tense is a meaningful operator that locates one event temporally with respect to a reference event.
- Some of the relations commonly expressed by semantic tense are “precedes”, “coincides with”, and “follows”.
- Where the reference event is the act of uttering the sentence itself, these relations correspond to main clause past, present, and future semantic tense, respectively.
- Tenses in the F/A component are $F_p$, predicates that take propositions as arguments.

(33) the F/A of René cogitated

(34) the F/A of René has cogitated.

◆ Since an operator like PAST is a function from propositions to propositions, it can be iterated, which allows for well-formed semantic structures for a present perfect.
5.6.3 The syntactic realization of tense as V-form feature

(35) $S[\alpha] \quad \alpha = V\text{-form features (head features) like FIN}$

NP $\quad$ VP$[\alpha]$

$V[\alpha] \quad$ XP

(37) Features geometry of verb-form features

FIN $\quad$ -FIN

PAST $\quad$ PRES $\quad$ PART $\quad$ BSE

PRS-P $\quad$ PSV-P $\quad$ PST-P

5.6.4 The morphological category of tense
◆ In English there is only a two-way morphological contrast between morphological PAST and morphological PRES.
◆ The morphological forms are often at odds with the similarly named semantic distinctions.
  ➢ If the dog was here right now, she’d be barking. (semantic present)
  ➢ I leave for Peoria next week. (semantic future)

5.6.5 The semantics, syntax, and morphology of tense
◆ Tense is represented in English finite clauses as the verb form feature ([PRES] or [PAST]) on the verb that serves as the head of the finite clause and is realized as morphological inflection on the verb.

- **past form lexical rule** (redundant information in red)

  $F/A: F_\psi \quad \rightarrow \quad [F_p^{\text{PAST}}] ([\text{Prop } F_\psi F_\psi])$

  morph: $V[0] \quad \rightarrow \quad V[1, \text{PAST}]$
  syntax: $V \quad \rightarrow \quad V[\text{PAST}]$

  ➢ $V[1, \text{PAST}]$ in morphology corresponds to $V[\text{PAST}]$ in syntax as default.
  ➢ $[F_p^{\text{PAST}}]$ is predictable from $V[1, \text{PAST}]$

- **present form lexical rule** (redundant information in red)

  $F/A: F_\psi \quad \rightarrow \quad [F_p^{\text{PRES}}] ([\text{Prop } F_\psi F_\psi])$

  morph: $V[0] \quad \rightarrow \quad V[1, \text{PRES}]$
  syntax: $V \quad \rightarrow \quad V[\text{PRES}]$

  ➢ $V[1, \text{PRES}]$ in morphology corresponds to $V[\text{PRES}]$ in syntax as default.
  ➢ $[F_p^{\text{PRES}}]$ is predictable from $V[1, \text{PRES}]$
The discrepancy between the position of the semantic subject in (40a) and the syntactic subject in (40b) is similar to what is found in the case of a raising-to-subject verb like seem.

Only one morphological tense is allowable to a verb for two reasons.
- Finite verb forms are all V[1] (a morphological word) and further inflection ([V[1] V[0], Af]) is impossible.
- Feature (including verb form feature) is a function in a mathematical sense (i.e., verb form feature cannot have two values).

Since all surface words must be morphologically complete words (X[1]), all verbs must have some inflection.

A clause of the form NP VP where VP is neither [FIN] nor [-FIN] will fail to be grammatical for an essentially morphological reason: its verb will remain a morphologically incomplete stem (V[0]).

5.6.7 English Auxiliary Verbs

(42) finite main verb in syntax: sang V[PAST]

(43) finite auxiliary verb in syntax: could V[AUX, PAST]

May and might

John said to me, “You may leave.” (Prop [Fp PRES](Prop [Fp MAY] Prop))
John told me that I might leave. (Prop [Fp PAST](Prop [Fp MAY] Prop))

(44) may

syntax: V[AUX, PRES] in [___, VP[BSE]]
F/A: [Fp PRES][Fp MAY] in [prop __, Prop]
morph: V[1, PRES]
phon: /met/
(44') might
syntax: V[AUX, PAST] in [ __, VP[BSE]]
F/A: [ fp PAST][ fp MAY] in [ prop __, Prop]
morph: V[1, PAST]
phon: /maɪt/

(44) and (45) represented in inheritance hierarchy
syntax: V[AUX] in [ __, VP[BSE]]
F/A: [ fp MAY]
morph: V[1, PRES] morph: V[1, PAST]
phon: /meɪ/ phon: /maɪt/

(48) syntax and F/A of What did Mendel sing?
syntax by the LOC strategy syntax by the PS strategy
CP[WH] CP[WH]

S[AUX, PAST] NP[WH] S[INV]

NP VP[AUX, PAST] V[INV] S[BSE]

Mendel did NP Mendel


did sing V[BSE] NP[WH] what


◆ *What sang Mendel? cf. What did Mendel sing?
  ➢ (the LOC strategy) This violates the wh-LOC ([CP[WH] XP[WH] < V[AUX, FIN] … ]), because sang is not V[AUX, FIN].
  ➢ (the PS strategy) This violates the inversion PS (S[INV] ⇒ V[INV], S[BSE]), because sang is not V[INV].
◆ *Sang Mendel? cf. Did Mendel sing?

5.6.8 Do “support”
◆ One use of do behaves like a modal auxiliary in most respects and can be used to salvage inversion in sentences with no auxiliaries.
◆ Like other modals, supportive do has only finite forms and is subcategorized for an infinitive verb phrase complement (VP[BSE]).
  ➢ Like the modals, it cannot occur in the scope of another auxiliary or in any other context that requires a specific non-finite form of the verb (e.g. *I object to John’s doing [sing the Internationale]; *John has done [sing the Internationale], *For me to do [sing the Internationale] would be a mistake.)
◆ The auxiliary do only carries a tense and lacks RS.
(49) lexical entry for *do* (auxiliary):
syntax: V[FIN, AUX] in [__, VP[BSE]]
F/A: [fp PRES] or [fp PAST]
RS: nil
morph: V[1]
phon: V[1, PAST] /dId/
   V[1, PRES, 3SG] /dʌz/
   V[1, PRES] /du:/

(49) in inheritance hierarchy

syntax: V[AUX] in [__, VP[BSE]]
RS: nil

F/A: [fp PRES]
morph: V[1, 3SG]
phon: /dʌz/

F/A: [fp PAST]
morph: V[1]
phon: /dId/

◆ In cases where a less effortful, simpler form is available that expresses the same meaning (*Mendel sang the song*), supportive *do* will not be used (*Mendel did sing the song*).
◆ If we admit that these two types (with or without *did*) count as the same but appear in different environments (just like a single phoneme has two allophones, which are in complementary distribution, each appearing in specific environments), everything turns out all right. The type with the dummy *do* is required in *do*-support environments or when *do* is stressed to mark positive polarity. Otherwise, the one without *do* must be chosen. That is, the finite clause with the supportive *do* is marked and the one without it is unmarked.
◆ This condition (on economy of language use (?) “Choose the simpler form unless there is reason for choosing the more complex form”) is grammaticalized in English.

◆ **subject wh-question**

(1) *Who sang the song?* (2) *Who did sing the song?* (no stress on *did*)

- Even if the grammar admits both (1) and (2), then the condition on economy of language use chooses (1) instead of (2), which explains the asterisk of (2).
- This line of reasoning seems to be on the right track, because when the auxiliary *did* is stressed, (2) is acceptable. When *did* is stressed, (2) does not violate the economy condition and is acceptable.
  (YU) I didn’t sing the song. You didn’t sing the song. Then who **DID** sing the song?

- The acceptability of this example shows that the stressed DID (to mark positive polarity) is not in the inverted auxiliary verb position (V[INV] in [CP[WH] XP[WH] V[INV] S[-FIN]]) but in the auxiliary verb position after the subject NP (V[AUX, FIN] in [s NP V[AUX, FIN] VP[-FIN]]). So the syntax of (2) (by the PS strategy) must be as follows.
If this is correct, the following possibility is out.

Therefore, what needs to be done about (1) and (2) is to explain how the grammar admits the matrix subject *wh*-question (1).

(1) in syntax by the LOC strategy:

As shown below, the *wh*-question LOC does not apply, because there is no *V[FIN, AUX]* in (1). However, (1) meets the default LOC: \([S \ NP < VP]\).

(1) in syntax by the PS strategy

Although (1) does not meet the PS rule for direct wh-question, it meets the PS rule for indirect wh-question.

If we assume that direct wh-question is under the purview of English V-2 constraint, both (1) and (2) meet the constraint. Again, the condition on the economy of language use comes into play and favors (1) over (2).

5.6.9 Be

(50) be:

syntax: V[AUX] in [__, XP]
F/A: nil or Faa (existential; cf. Chapter 2 (98))
RS: nil or TYPE “be” in [EVENT __ PAT ANCloc]
morph: V[0]
phon: 1. V[1, PAST, 1SG] was
2. V[1, PAST] were
3. V[1, PRES, 1SG] am
4. V[1, PRES, 3SG] is
5. V[1, PRES] are
6. V[1, PST-P] been
   V[1, BSE] be (by the productive rule V[1, BSE] \(\rightarrow\) V[0])
   V[1, PRS-P] being (by the productive –ing rule)

(50) in inheritance hierarchy

F/A: nil
RS: nil
syntax: V[AUX] in [__, XP]
morph: [0]
phon: be
phon: am
[1SG]  [3SG]  elsewhere
[1SG]  [3SG]  elsewhere
was
were

F/A: Faa
RS: TYPE “be” [EVENT PAT ANCloc]
Mary was a student.

5.6.10 Have

◆ For those dialects that can treat possessive have as an auxiliary (e.g., Have you a match? I haven’t a car) the verb will receive the lexical description (51).

(51) have (of possession in certain dialects):
  syntax: V[AUX] in [__, NP]
  F/A: F_F
  RS: TYPE “have” in [EVENT AGTpossessor PATpossessum]
  morph: V[0]
  m-phon:
  1. V[1, PAST] /hæd/
  2. V[1, PRES, 3SG] /hæz/
  3. V[1, PST-P] /hæd/
  4. V[0] /hæv/
     V[1, PRES]
     V[1, BSE]
     V[1, PRS-P]

◆ Regardless of whether a clause is finite in the syntactic sense, it is possible for the proposition corresponding to it to have semantic tense.

(52) I am at Jimmy’s right now/*at 11:00 last night.
(53) I was at Jimmy’s *right now/at 11:00 last night.
(54) I have been at Jimmy’s *right now/*at 11:00 last night.

◆ These adverbials are clearly distributed according to meaning as the following examples with non-finite verbs show (semantic present and past tense).

(55) a. I believe Leslie to be at Jimmy’s right now/*at 11:00 last night.
    b. I believe Leslie to have been at Jimmy’s *right now/at 11:00 last night.

◆ McCawley (1971, 1981) concluded that
  ➢ auxiliary have encoded a semantic past tense and
  ➢ its absence in non-finite forms encoded (relative) semantic present tense.
finite forms of perfect auxiliary *have*

- a positive indication of present and past tenses in the morphology
- a semantic value PAST contributed by the stem of the auxiliary verb
- The present perfect is a present of a past.
  - a statement about the past whose relevance continues to the present
- The past perfect is a past of a past.
  - an event that was true at a time anterior to a past event but whose relevance continued to the time of the reference event and may have ceased to be true at times later than the reference event
  
  cf. simple past: an event that was true at some earlier time and is neutral with regard to present relevance

(57) a. Stoppard has written 22 plays.
   b. Shakespeare has written 38 plays.

(58) a. Stoppard had written 15 plays by the time he was 35.
   b. Shakespeare had written 25 plays by the time he was 35.

(59) *have* (perfect auxiliary):

  syntax: V[AUX] in [__, VP[PST-P]]
  F/A: [rp PAST]
  RS: nil
  morph: V[0]

  phon:
  1. V[1, PAST] /hæd/ with F/A (PAST(PAST(Prop))
  2. V[1, PRES, 3SG] /hæz/ with F/A (PRES(PAST(Prop))
     V[1, PRES] with F/A (PRES(PAST(Prop))
     V[1, BSE]
     V[1, PRS-P]
Stoppard has written 22 plays.

(60)

\[ \text{S[PRES]} \]

\[ \begin{array}{c}
\text{NP} \\
\text{Stoppard} \\
\text{VP[PRES]} \\
\text{V[PRES]} \\
\text{has} \\
\text{written 22 plays} \\
\text{VP[PST-P]} \\
\end{array} \]

(61)

\[ \begin{array}{c}
\text{Prop} \\
\text{PRES} \\
\text{Fp} \\
\text{PAST} \\
\text{Arg} \\
\text{STOPPARD} \\
\text{WRITE 22 PLAYS} \\
\end{array} \]

(65) a. I remember that he had already left by the time I got there.
   b. I remember him as having already left by the time I got there.

◆ To account for the fact that (65b) can be interpreted as equivalent to (65a) and therefore to have a past tense of a past tense in the combinatoric semantics,
   ➢ McCawley postulated a rule of have deletion whereby all instances of have are deleted except one.
   ➢ Here the lexical entry for perfective have lacks a specification for a past participle.
     ◇ Because have requires a past participial complement, nested have is impossible. cf. (59)
     ◇ The best that can be done in non-finite verb phrases of English is to indicate all manner of pastness with a single semantic operator.

Semantic present tense
   ➢ In (55a) I believe Leslie to be at Jimmy's right now, the embedded clause must be in the present semantically.
   ➢ McCawley (1998:222) had a transformation that deletes present tense in non-finite S.

lexical entry for semantic present
   syntax: nil
   F/A: \([_{F_p} \text{PRES}]\)
   RS: nil
   morph: nil
   phon: nil

5.7 Negation
   ◆ The distribution of not
     ➢ In a non-finite clause, not simply precedes the verb phrase: your not having been there; (We request) that you not say a word, They asked you not to smoke, and so on.
     ➢ In a finite clause, not is subject to a special linear order component requirement that it follow a V[FIN,
not

syntax: Word in \([\text{VP[-FIN, AUX]} \text{, VP[-FIN]}]\) or \([\text{XP} \text{, XP}]\) where XP\#VP
F/A: \([F_p, \text{NOT}]\)
RS: nil
morph: Word
phon: /n\(\text{a}\t\)/
LOC: \([\text{XP} \text{not} < \text{XP}]\) (ordering between sisters; words precedes phrases.)

(cf. John is not a student. John has not lived in the house.)

(cf. not VP\[to\], not VP\[PRS-P\], not VP\[BSE\])

When there is a V\[FIN, AUX\] in the VP, this must precede its complement (non-finite) XP and hence must precede not as well, producing a VP structure \([\text{VP[-FIN, AUX]} \text{V[FIN, AUX]} [\text{XP not} \text{XP}]]\). This admits the structure John does not smoke.

\[
\begin{align*}
\text{VP[FIN, AUX]} & \quad \text{VP[FIN, AUX]} \\
\text{V[FIN, AUX]} \quad \text{has} & \quad \text{VP[-FIN]} \quad \text{not} \\
\text{V[FIN, AUX]} \quad \text{is} & \quad \text{VP[-FIN]} \quad \text{not} \\
\text{XP} & \quad \text{lived in the house} \\
\text{XP} & \quad \text{a student}
\end{align*}
\]

When there is a string of auxiliary verbs as in John has been being examined and not that negates the whole proposition as in NOT (John has been being examined), not can be placed:

John [VP\[AUX, PRES\] has [VP\[PST-P\] been [VP\[PRS-P\] being examined]]]

Of the two possible positions for the proposition-negating not, the place shown by the red arrow exhibits the least amount of mismatch between syntax and F/A.

The ungrammaticality of *John [VP\[FIN\] not [VP\[FIN\] smokes]] is explained as violation of syntactic requirement: [VP\[FIN\] not, VP\[-FIN\]] or [XP not, XP] where XP\#VP.

cf. never

syntax: Adv[NEG] in \([\text{VP[-FIN]} \text{, VP[-FIN]}]\) (as in Mary has never sung. *Mary never has sung.) or \([\text{VP[-FIN, AUX]} \text{, VP[-FIN, -AUX]}]\) (as in Mary never smokes.)

F/A: \(F_p\) (=NOT EVER?)
morph: Word
m-phon: /né\(\text{v}\)/
LOC: \([\text{VP} \text{never} < \text{VP}]\) (ordering between sisters; words precedes phrases.)

When used alone, never can trigger negative inversion but not cannot.

Never have I thought such a thing.

*Not have I thought such a thing.

Never counts as XP[NEG] (namely, AdvP[NEG]) in the Negative Inversion LOC: [S[FIN, AUX] XP[NEG] <
V[FIN, AUX] …] whereas not does not. This is probably because not does not belong to any syntactic category (only specified as a word in (66)) and therefore does not serve as the head of a phrase when used alone.

- The first syntactic frame of never ([VP,FIN] never, VP[-FIN]) covers never VP[to], never VP[PRS-P], never VP[BSE].
- % John never [VP,FIN, AUX] has smoked] violates both syntactic frames.
- In VP-deletion, the word order John never has is possible.

![Syntax Tree]

Never must be adjoined to the complement VP of has but this is impossible because has does not take an overt complement. The only phrase available for never to adjoin to is VP[PRES, AUX].

Mendel did not sing, (a statement about a past (non-)event; PAST is outside the scope of NOT.)

(“In the past, there was not an event of Mendel’s singing”)

![Syntax Tree]

According to (66), not must follow V[FIN, AUX] and since it may modify any verb phrase, the linear order component stipulation governing its position will often lead to scope ambiguity in those cases where the auxiliary, unlike do, has a value at F/A level.

The sentence Students may not smoke on campus, is ambiguous between

- (1) a reading in which permission to smoke is denied to the students (may smoke on campus is negated) and
- (2) a reading in which permission to refrain from smoking is granted (smoke on campus is negated).
The maximization of congruence of c-command relationships between F/A structure and syntax should make this so.

The possibility of ambiguity is perfectly natural given the separation of levels and the special linear order rule governing the position of not in English.

(71) What problem do the students not have to do?
(72) *What problem do not the students have to do?

(72) by the LOC strategy

Wh-LOC: \[CP[WH] \; XP[WH] < V[FIN, AUX] < (NP[NOM]) \; \ldots \]
(72) by the PS strategy

- To get the word order of (72), *not* must be adjoined to S[BSE], which violates the syntactic requirements on *not.*

\[ \text{CP[WH]} \]
\[ \text{NP[WH]} \quad \text{S[INV]} \]
\[ \text{what problem} \quad \text{V[INV]} \quad \text{do} \]
\[ \text{NP} \quad \text{VP[BSE]} \]
\[ \text{the students} \quad \text{not} \quad \text{have to do} \quad \text{[NP]} \]

5.7.1 Negative contraction

- When the negative element *not* is contracted with the auxiliary, there is a different order of elements.
  - Corresponding to the ungrammatical (72) is the perfectly grammatical, indeed very natural, (74).

(74) What problem don’t the students have to do?

- How to treat negative contraction in the automodular framework
  - For the common auxiliaries, there are only about twenty actual contracted forms since two possibilities (*mayn’t, *amn’t*) don’t exist.
  - On the other hand, *ain’t* exists as a contraction only with no apparent source.
  - Moreover five have unpredictable phonological shapes, and six have fixed scope of the negation and the meaning of the auxiliary.
  - The form *aren’t* has the peculiarity that it counts as a first person singular form in inversion cases: *Aren’t I invited? What aren’t I going to see?*
  - Simply list all sixteen negative contraction forms in the lexicon.

(75) *can’t*

- syntax: V[PRES, AUX] in [__, VP[BSE]]
- F/A: [Fp PRES][[Fp NOT][Fp CAN]] in [Prop __], Prop]
- morph: V[1, PRES]
- phon: /kænt/

(76) *mustn’t:*

- syntax: V[PRES, AUX] in [__, VP[BSE]]
- F/A: [Fp PRES][[Fp MUST][Fp NOT]] in [Prop __], Prop]
- morph: V[1, PRES]
- phon: /mʌst/
(77) negative copula *ain’t*:
  syntax: \( V[\text{PRES}, \text{AUX}] \) in \([ \_ , \text{XP}]\)
  F/A: \([Fp \ \text{PRES}]([Fp \ \text{NOT}] \in [prop \ \_ , \text{Prop}]\)
  morph: \( V[1, \text{PRES}]\)
  phon: /eɪnt/

*aren’t* (first person singular for inversion)
  syntax: \( V[\text{PRES}, \text{AUX}, \text{1SG}] \) in \([ \_ , \text{XP}]\)
  F/A: \([Fp \ \text{PRES}]([Fp \ \text{NOT}] \in [prop \ \_ , \text{Prop}]\)
  morph: \( V[1, \text{PRES}]\)
  phon: /æ-nt/
  inversion LOC: (47)
  
  (The other possibility is to use the feature \text{INV} in syntax.)
  syntax: \( V[\text{PRES}, \text{INV}, \text{1SG}] \) in \([ \_ , [\text{SC } [\text{NP I}], \text{XP}]\])
  F/A: \([Fp \ \text{PRES}]([Fp \ \text{NOT}] \in [prop \ \_ , \text{Prop}]\)
  morph: \( V[1, \text{PRES}]\)
  phon: /æ-nt/

better (as in *You/He better hurry.*)
  syntax: \( V[\text{PRES}, \text{AUX}] \) in \([ \_ , \text{VP[BSE]}]\)
  F/A: \([Fp \ \text{PRES}]([Fp \ \text{BETTER}] \in [prop \ \_ , \text{Prop}]\)
  morph: \( V[1, \text{PRES}]\)
  phon: /bɛt/\n  LOC: \([S \ \text{NP} < \text{VP}]\)
  
  (This lexical specification prevents better from undergoing inversion. The other possibility is to use the feature \text{-INV} in syntax. \( V[\text{PRES}, \text{AUX}, \text{-INV}]\))

\emph{Mendel mustn’t sing.}

(78) \[ S[\text{PRES}, \text{AUX}] \]

\[ \begin{array}{c}
\text{NP} \\
\text{Mendel} \\
\text{V[\text{PRES}, \text{AUX}] mustn’t} \\
\text{VP[BSE]} \\
\text{sing} \\
\end{array} \]
Mendel mustn’t not sing Home on the Range.

* This can certainly mean that he is forbidden from refraining to sing it, i.e., he is required to sing, where not is associated with the verb phrase sing Home on the Range.