# Problem Set 2: ABCDE

Due September 14 before class. Submit on IVLE > Files > Student Submission > PS2.

**Note:** This assignment does *not* have to be written as a short paper, unlike Part 2 of PS1.

In this problem set, we study the "language" ACBDE. ABCDE has five words:

(1) **Lexicon of ABCDE:**

a. A = [A; uC]

b. B = [B]

c. C = [C]

d. D = [D; uA, uC*]

e. E = [E; uB, uC]

For example, the word *A* has the categorial feature A and has one uninterpretable selectional feature: uC. A sentence of ABCDE is grammatical if it can be built from the words *A*, *B*, *C*, *D*, *E* using the operations in (2–4), and ends with no unchecked uninterpretable features. (Here the trees in (2–4) are *ordered*: the left daughter is pronounced before the right daughter.)

(2) **Merge**$(\alpha, \beta)$: (read: 'merge $\beta$ to $\alpha$')

For any syntactic objects $\alpha$, $\beta$, where $\alpha$ bears an unchecked selectional feature F, and $\beta$ bears a matching categorial feature, call $\alpha$ the head and

a. check the feature F on $\alpha$: ~~F~~;

b. let the label $\gamma$ be the unchecked features of $\alpha$; and

c. return $\begin{array}{c}\gamma\\ \alpha\quad\beta\end{array}$ if $\alpha$ is a head and $\begin{array}{c}\gamma\\ \beta\quad\alpha\end{array}$ otherwise.

(3) **Adjoin**$(\alpha, \beta)$: (read: 'adjoin $\beta$ to $\alpha$')

For any syntactic objects $\alpha$, $\beta$, where neither $\alpha$ nor $\beta$ has any unchecked selectional feature, call $\alpha$ the host and return $\begin{array}{c}\gamma\\ \alpha\quad\beta\end{array}$ or $\begin{array}{c}\gamma\\ \beta\quad\alpha\end{array}$, where the label $\gamma = \alpha$.

(4) **Move**$_{\textbf{phrase}}(\alpha, \beta)$ (read: '$\beta$ moves to $\alpha$'s specifier' or '$\alpha$ attracts $\beta$')

If $\alpha$ is a projection with a feature F, $\beta$ a maximal projection with a matching feature F, and $\alpha$ contains $\beta$, and F is strong (marked F$^\star$) on $\alpha$ or $\beta$ or both, then

a. check the strong features F$^\star$ on $\alpha$ and/or $\beta$: ~~F$^\star$~~;

b. mark $\beta$ in $\alpha$ as deleted: ~~$\beta$~~ (call this a trace); and

c. return $\begin{array}{c}\gamma\\ \beta\quad\alpha\end{array}$ where the label $\gamma$ includes all unchecked features of $\alpha$.

Your task is to consider the sentences in (5–11) below. For each sentence in (6–11):

(i) determine whether or not it is a grammatical sentence of ABCDE;

(ii) if it is grammatical, draw its tree, numbering each node and showing relevant features;

(iii) give the sequence of Merge, Adjoin, and $\text{Move}_{\text{phrase}}$ steps which derive the sentence.

See the example answer for (5) below.

(5) A B C (see example below)

(6) C E B

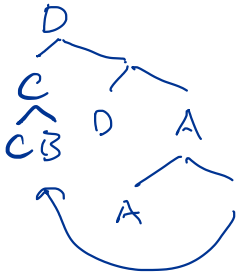
(7) C B D A

(8) A B C D

(9) A C E B

(10) C D B A

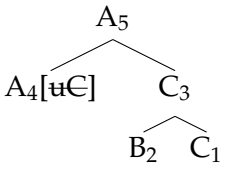
(11) C D A E B



**Example:**

(i) Sentence (5) *A B C* is a grammatical sentence of ABCDE.

(ii)




(iii) 2 steps:

1. $C_3 = \text{Adjoin}(C_1, B_2)$
2. $A_5 = \text{Merge}(A_4, C_3)$

$A_5$ has no unchecked uninterpretable features and is pronounced *A B C*, so we're done.

**EL5101R students:** Turn the page...

**For EL5101R students only:**

Toba Batak is an Austronesian language spoken in northern Sumatra, Indonesia.[1] Consider the data here and answer the four questions below, in the context of the various tests discussed so far in class.

Toba Batak verbs come in two forms, called active and passive. (12) and (13) are two ways of saying the same thing. (Names are preceded by the marker *si*, glossed SI.)

(12) Mang-ida si Ria si Torus.
ACTIVE-see SI Ria SI Torus
'Torus saw Ria.'

(13) Di-ida si Torus si Ria.
PASSIVE-see SI Torus SI Ria
'Ria was seen by Torus.' = 'Torus saw Ria.'

Let's call *si Torus* in (12) and *si Ria* in (13) the *subject*. We might then describe Toba Batak word order as verb-initial and subject-final.

Consider the following contrast:

(14) a. Mang-ida dirina si Poltak.
ACTIVE-see self SI Poltak
'Poltak sees himself'

b. * Mang-ida si Poltak dirina.
ACTIVE-see SI Poltak self

**Q1:** What is the contrast in (14) evidence for? What test is used?

(15) Mang-antuk si John jala man-ipak si Bob si Fred.
ACTIVE-hit SI John and ACTIVE-kick SI Bob SI Fred
'Fred hit John and kicked Bob.'

(16) Di-antuk si John jala di-sipak si Bob si Fred.
PASSIVE-hit SI John and PASSIVE-kick SI Bob SI Fred
'Fred was hit by John and kicked by Bob.' = 'John hit Fred and Bob kicked Fred.'

**Q2:** What are (15) and (16) evidence for? What test is used?

[1] Data here comes from „Semantic-role-based syntax in Toba Batak" Paul Schachter's 1984, but don't look it up!

(17) Mang-antuk si John jala di-sipak si Bob si Fred.
ACTIVE-hit SI John and PASSIVE-kick SI Bob SI Fred
'Fred hit John and was kicked by Bob.' = 'Fred hit John and Bob kicked Fred.'

(18) Di-antuk si John jala man-ipak si Bob si Fred.
PASSIVE-hit SI John and ACTIVE-kick SI Bob SI Fred
'Fred was hit by John and kicked Bob.' = 'John kicked Fred and Fred kicked Bob.'

**Q3:** What are (17) and (18) evidence for? (Note: These examples teach us something new, in addition to what we learned in Q2.)

Finally, consider the contrast in (19). This data is surprising.

(19) a. Di-ida si Poltak dirina.
PASSIVE-see SI Poltak self
'Poltak sees himself.'

b. * Di-ida dirina si Poltak.
PASSIVE-see self SI Poltak

**Q4:** Why is (19) surprising?