Bracketing Guidelines for Penn Korean TreeBank

Chung-hye Han  
*University of Pennsylvania*

Na-Rae Han  
*University of Pennsylvania*, nrh@ling.upenn.edu

Eon-Suk Ko  
*University of Pennsylvania*, esko@alumni.upenn.edu

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Bracketing Guidelines for Penn Korean TreeBank

Abstract
This document describes the syntactic bracketing guidelines for the Penn Korean Treebank, which is an online corpus of Korean texts annotated with morphological and syntactic information. The corpus consists of around 54,000 words and 5,000 sentences. The Treebank uses a phrase structure style of annotation, making head/phrasal node distinctions, argument/adjunct distinctions, and identifying empty arguments and traces for moved constituents. This document is organized as follows. In section 2, the basic syntactic ingredients of a clause structure are presented. Some notational conventions are introduced in section 3, including different types of syntactic tags, such as head level tags, phrase level tags and function tags used in the Treebank. In section 4, the bracketing guidelines for various types of clauses are discussed, including simple clauses, subordinate clauses, and clauses with coordination. Several types of subcategorizaion frames found in the Treebank are then presented in section 5, followed by bracketing guidelines for various linguistic phenomena in sections 6 to 21, including guidelines for annotating punctuation. The document ends with guidelines for handling some bracketing ambiguities and for handling some confusing examples.

Comments

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Bracketing Guidelines for Penn Korean TreeBank

Chung-hye Han, Na-Rae Han, Eon-Suk Ko

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1 Introduction

This document describes the syntactic bracketing guidelines for the Penn Korean Treebank, which is an online corpus of Korean texts annotated with morphological and syntactic information. Each word in the corpus is annotated with part-of-speech (POS) tags and each sentence is bracketed to represent its structural analysis. A list of part-of-speech tags used in Penn Korean Treebank is presented in the appendix at the end of this document. For a detailed description of part-of-speech tags, see the IRCS technical report titled “Part of Speech Tagging Guidelines for Penn Korean Treebank” written by Chang-hye Han and Na-Rae Han. For structural analysis, the Treebank uses a phrase structure style of annotation, making head/phraseal node distinctions and argument/adjunct distinctions, and identifying empty arguments and traces for moved constituents.

This document is organized as follows. In §2, the basic syntactic ingredients of a clause structure are presented. Some notational conventions are introduced in §3, including different types of syntactic tags, such as head level tags, phrase level tags and function tags used in the Treebank. In §4, bracketing guidelines for various types of clauses are discussed, including simple clauses, subordinate clauses, and clauses with coordination. Several types of subcategorization frames found in the Treebank are then presented in §5, followed by bracketing guidelines for various linguistic phenomena in sections §6 to §21, including guidelines for annotating punctuation. The document ends with guidelines for handling some bracketing ambiguities in §22, and for handling some confusing examples in §23.

2 An Overview of Basic Clause Structure

2.1 Basic elements of S

2.1.1 Predicate

The predicate is either the lowest VP or ADJP.

2.1.2 Arguments of the predicate

- External:

  The surface subject is an NP marked with a nominative case, and is tagged as -SBJ. In some cases, i.e., multiple nominative constructions, there are more than one nominative marked NPs in a clause. See §11 on bracketing guidelines for multiple nominative constructions.

  The surface subject may be an S which can be marked with a nominative case. In this case, S has the function tag -SBJ.

- Internal:

  Object NP: marked with an accusative case and has the function tag -OBJ.

  Object S: (can be) marked with an accusative case and has the function tag -OBJ.

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Complement NP: marked with an adverbia l postposition and has the function tag -COMP.
Complement S: marked with a complementizer and has the function tag -COMP.

2.2 Levels of attachment

- S-level:
  The following are attached at S-level: subject NP, highest VP, fronted constituents, initial and final punctuation, and adverbial modifiers that precede the subject NP, such as sentential adjunct clauses, NP adjuncts, and adverb phrases.

- VP-level:
  The following are attached at VP-level: object NP, complement NP, complement clause and almost all adverbial modifiers that follow the subject NP, such as sentential adjunct clauses, NP adjuncts, and adverb phrases.

- ADJP-level:
  The following are attached at ADJP-level: complement NP, almost all adverbial modifiers that follow the subject NP, such as sentential adjunct clauses, NP adjuncts, and adverb phrases.

2.3 Complementation within syntactic categories

Complements are attached inside the VP, NP or ADJP. Structurewise, a complement and its head are in sister relation. In (1), X is the head, and YP is the complement of X.

(1) \[
\begin{array}{c}
XP \\
YP \ X
\end{array}
\]

- Complement of verbs:
  1. internal arguments are complements of verbs.
  2. auxiliary verbs and modal verbs take VPs or ADJPs as their complements.

- Complement of nouns:
  1. We do not make argument/adjunct distinctions for nouns. In general, we treat nouns associated with another noun as modifiers.
  2. For complex NPs, we treat the clause associated with the head noun as a modifier of that noun.

- Complement of adjectives:
  1. internal arguments are complements of adjectives.

- Complement of adverbs:
  1. There are some adverbs which take an argument.\(^2\)

\(^2\)Some examples are: ‘-쪽에’, ‘-쪽으로’, ‘는', ‘는’, ‘-으로', ‘-으로서', ‘-으로서의’. See §9 for more on adverbs that take an argument.
2.4 Modification

S, ADVP, or NP can modify S, VP or ADJP. S and DANP can modify another NP. ADVP can modify another ADVP. Also, NPs can modify other NPs. Structurewise, a modifier adjoins onto the phrase it is associated with. In (2), YP modifies XP.

(2) \[ \text{XP} \quad \text{YP} \quad \text{XP} \]

- Modifiers of a noun adjoin onto the NP they are associated with.
- Modifiers of a verb adjoin onto the lowest VP they are associated with.
- Modifiers of an adjective adjoin onto the ADJP they are associated with.
- Modifiers of an adverb adjoin on to the ADVP they are associated with.
- Modifiers of a sentence adjoin onto the S they are associated with.

3 Notation

3.1 Clause level tags

S: Simple sentential clause. Includes interrogatives, imperatives as well as declaratives.

3.2 Phrase level tags

ADJP: adjective phrase
VP: verb phrase
NP: noun phrase
ADVP: sentential and phrasal adverb phrase
ADCP: coordinate adverb phrase
DANP: adnominal phrase
INTJ: interjection
PRN: parenthetical
X: unknown, uncertain, or unbracketable

LST: list marker. includes surrounding punctuation. 1, 2, *, (‘*’), a, b, c, (1.2.1), (2), (3), etc.
3.3 Head level tags

In general, the head level tag of a lexical item corresponds to the part-of-speech tag of its stem. Such lexical items are not labeled with a head level tag. Instead, they are directly assigned with a phrase level tag. But in some cases, the part-of-speech tag of the stem of a lexical item does not correspond to its head level tag. Such cases include verbs with a verbalization suffix, adjectives with an adjectivization suffix, light verbs, nominal auxiliary predicates, and adverbs with an adverbialization suffix ‘-่ณ’ or ‘-ๆ ของ ต่อ’. Such lexical items are labeled with an appropriate head level tag, and then they are labeled with an appropriate phrase level tag.

VV: The stem of verbs with a verbalization suffix has the part-of-speech tag NNC. For syntactic annotation, these verbs are labeled with the head level tag VV.

VJ: The stem of adjectives with an adjectivization suffix has the part-of-speech tag NNC. For syntactic annotation, these adjectives are labeled with the head level tag VJ.

VX: The stem of nominal auxiliary predicates has the part-of-speech tag NNX. For syntactic annotation, these nominal auxiliary predicates are labeled with the head level tag VX.

LV: The stem of light verbs has the part-of-speech tag VV. For syntactic annotation, these light verbs are labeled with the head level tag LV.

ADV: The stem of adverbs with an adverbialization suffix ‘-่ณ’ or ‘-ๆ ของ ต่อ’ has the part-of-speech tag VJ. For syntactic annotation, these adverbs are labeled with the head level tag ADV.

CV: CV marks a compound verb. Note that there is no corresponding part-of-speech tag.

3.4 Function tags

Function tags mark the grammatical function of an NP (or an S) within a sentence. Usually, the subject has nominative case marker and the object has accusative case marker. But in some cases, even though an NP is marked with a nominative case marker, it may not be the subject of the sentence. Further, even though an NP is marked with accusative case marker, it may not be the object of the sentence. It is crucial that the function tags are markers of the grammatical function, and not case.

-SBJ: marks NP subject with nominative case marker.

-OBJ: marks NP complements with accusative case marker.

-COMP: marks NP complements that occur with adverbial postposition.

-ADV: marks NP when it is used adverbially.

-VOC: marks nouns of address.

-LV: used coupled with the LV tag on the light verb. This function tag marks the NP (‘base noun’) which associates with the light verb to form a predicate.

Note that S is marked with a function tag when it is used as the subject, object or the complement of a sentence. S does not have a function when it is used as an adjunct.
3.5 Null elements

*[^T]*: trace of movement, used in object/complement preposing constructions and relative clauses.

(NP *[^pro]*): for dropped subject or object. Generally, the dropped nominal constituent refers to some element within or outside the sentence in which it occurs, and can be recovered from the context. The sentence is still grammatical if the empty category is substituted by the appropriate constituent recovered from the context.

(WHNP *[^op]*): used for the empty operator in relative constructions.

(VV *[^?]*): used for verb deletion.

(VP *[^?]*): used for VP ellipsis.

(XP *[^?]*): used for other unknown empty categories.

3.6 Punctuation

commas: ,
parentheses ( ): -LRB- (left round bracket), -RRB- (right round bracket)
braces { }: -LCB- (left curly brace), -RCB- (right curly brace)
brackets [ ]: -LSB- (left square bracket), -RSB- (right square bracket)
quotation marks: “ ”
colons: :
final punctuations: . ? !

4 Clause type

4.1 Simple clause

Any simple sentences, including declaratives, interrogatives, imperatives, propositives, are S. The sentence final punctuation is attached to the highest S.

우산 가고 왔습니다.

(S (NP–SBJ 우산 가/NNC+ 임/PCA)
  (VP 가고 왔/VV+았/EPF+ дл/EFN)
 ./SFN)

우산 가고 왔습니까?

(S (NP–SBJ 우산 가/NNC+ 임/PCA)
  (VP 가고 왔/VV+았/EPF+ 들/EFN)
 ?/SFN)
4.2 Subordination

4.2.1 Sentential complements

A sentential complement is an argument of the verb. It is labeled as S with the function tag -COMP. In general, it is a sister of the verb it is associated with.

그는 무전기 가 고장났다고 말했다.

(S (NP-SBJ 그/NPN+는/PAP)  
   (VP (S-COMP (NP-SBJ 무전기/NNC+의/PCA)  
       (VP 고장났/VV+없/EPF+먹고/ECS))  
       말한다/VV+없/EPF+먹고/EFN)  
   ./SFN)

그건 얼마나 많이 스는 가에 달력 있지요.

(S (NP-SBJ 그/NPN+은/PAP)  
   (VP (VP (S-COMP (NP-SBJ *pro*))  
       (VP (NP-OBJ *pro*))  
       (VP (ADV 핵/NPF+ADV)  
          (ADVF 핵/NPF+ADV))  
       (VP 스/VV+는 't/EFN+로/PAD))))  
   달력/VV+없/EAU)  
   있/VX+있어요/EFN)  
   ./SFN)

4.2.2 Sentential adjuncts

Sentential adjuncts are adjoined to the S or VP that they are associated with.

달이 약한 더우면 찰양 엽질의 겨울에 달력된다.

(S (S (NP-SBJ 달/NNC+의/PCA)  
   (ADJP (ADV 핵/NPF+ADV)  
      (ADJP 동/VP+와/ECS)))(S (NP-SBJ 찰양/NNC  
   엽질/NNC+의/PCA)  
   (VP (VV 겨울/NNC+의/XS/과+먹/EFN))  
   ./SFN)

우리는 그 통신 기체에 대에 의아가했다.

(S (NP-SBJ 우리/NPN+는/PAP)  
   (VP (S (NP-SBJ *pro*)  
       (VP (NP-COMP 그/DAN  
          통신/NNC)
4.3 Coordination

Coordinated clauses are represented as sisters and they are attached to S. If a coordinating adverb is present, it is represented at the same level as the coordinated clauses.

박격포 종래는 정산 21이고 중기 종래는 정산 22이고 또한 박반총포 소태는 정산 23이지요.

(S (S NP-SBJ 박격포/NNC
종래/NNC+/PAU)
(VP (NP 정산/NPR
21/NNU+과/CO+/ECS)))
(S (S NP-SBJ 중기/NNC
종래/NNC+/PAU)
(VP (NP 정산/NPR
22/NNU+과/CO+/ECS)))
(ADCP 포란/ADC)
(S (S NP-SBJ 박반/NNC
종래/NNC
소태/NNC+/PAU)
(VP (NP 정산/NPR
23/NNU+과/CO+/지요/EFN)))
./SFN)

5 Subcategorization Frames

This section describes various subcategorization frames in Korean. In our analysis, internal arguments of a predicate are subclassified into objects and complements. The difference between them is that the former category typically takes an accusative case marker, including a null one, whereas the latter typically takes an adverbial postposition.

Not only noun phrases, but sentential constituents can also be an argument and be treated either as a subject, object or a complement. When a sentential element is explicitly nominalized with the suffixation of ‘-을/-를’ or ‘-이’, it is bracketed as S and then is projected to an NP with an appropriate function tag, i.e., NP-SBJ, NP-OBJ, or NP-COMP. These nominalized clauses can be optionally followed by a case marker or a postposition.

좌력 절도은 보통 철수들 임도악기 원래에 혹은 우방으로의 태어들을
은태악기 원래에 가능한 한 최대로 합니다.

(S (NP-SBJ *pro*)
(VP (NP-OBJ 좌력/NNC
지원/NNC+/PAU))
Sentential elements taking suffixes such as ‘-지’ and ‘-나’ can also be a sentential subject, sentential object or sentential complement. They are bracketed as S with appropriate function tags, i.e., S-SBJ, S-OBJ, or S-COMP. Note that they are not further projected to an NP. Although these sentential arguments can be optionally followed by a case marker or a postposition, they are distributionally restricted to be considered as a full-edged NP.

그동안의 근사 정의가 된다는 지나칠 모든 것에서.

(S (S-OBJ-1 (NP-SBJ (NP 근사/NNC+의/PCA)
    (NP 근사/NNC
    정의/NNC+의/PCA)))
  (VP (NP 운동/NPN+의/CO+는 지/EFN+는/PAD)))
  (VP (S-OBJ *T*+1))
  (VP (ADVP 잘/ADV)
    (VP 모든/VV+는/EPF+는 닫다/EFN))))
./SFN)

이런 종류의 기존식의 사용되는데 닫는 방위에는 세 가지 풍토가 있소.

(S (S NP-SBJ *pro*)
  (VP (S-COMP (NP-SBJ (NP 어떤/DAN
    종류/NNC+의/PCA)
    (NP 기존식/NNC+의/PCA))
    (VP (VV 사용/NNC+의/XSV+는 날/EFN+는/PAD)))
  (VP (VV+의/ENM)))
  (S (NP-ADV 방위/NNC+의/PAD+는/PAU))
In all other cases where S is an argument, S itself is simply treated as a complement of a verb, i.e., S-COMP. This includes, but is not limited to, the cases where a sentence is followed by an inflectional ending (-ECS) such as ‘-다고’ and ‘-다고’ as well as ‘-도록’, etc.

5.1 Intransitive Verb

Intransitive verbs do not take any internal arguments. They include verbs such as ‘자다, 전사하다’, etc.

제가 어미 말씀드린 뒤와 같이 1 초대장은 오늘 야침에 전사했지요.

(S (ADVP (NP-COMP (S (NP-SBJ 1/NNU
    (VP (ADVP 어미/ADV)
     (VP (NP-OBJ *pro*)
      말씀 듣다/VV+/EAN))))
    (np 박/NNX+의/PAD)))
수이/ADV)
(S (NP-SBJ 1/NNU
    소대장/NNC+은/PAU)
    (VP (NP-ADV 오늘/NNC
     야침/NNC+에/PAU)
     (VP (VV 전서/NNC+의/XSV+/EFP+지요/EFN))))
./SFN)

5.2 Transitive Verb

Transitive verbs take an internal argument, which is optionally marked with an accusative case and has the function tag -OBJ.

어떤 과목에서 직업별의 근무 요령을 닦두는가?

(S (NP-SBJ *pro*)
    (VP (NP-ADV 역전/DAN
     과목/NNC+에서/PAU)
     (VP (NP-OBJ (NP 직업별/NNC+의/PAU)
        (NP 근무/NNC
         요령/NNC+을/PCA))
        닦두/VV+는 가/EFN))
?/SFN)

Some verbs such as ‘말하다’ can take a sentence as an internal argument.
5.3 Intransitive Verb with a complement NP

Some intransitive verbs take an NP complement which is marked with a postposition and the function tag -COMP. Such verbs include ‘대한다, 속한다, 가다’ and so on.

이 사람이 조직에 속합니다.

(S (NP-SBJ 이/DAN 사람/NNC+도/PAU) (VP (NP-COMP 조직/NNC+에/PAD) 속하다/VV+더니/EFN))

고등학교 3학년 학생은 본선소에 갑니다.

(S (NP-SBJ 고등/NNC 학교/NNC) (NP 3/NNU 학년/NNX) (NP 학생/NNC+은/PAU)) (VP (NP-COMP 본선소/NNC+에/PAD) 가다/VV+더니/EFN)

여수 근정, 보초와 감시병과 직업병의 근무 요령, 근태 예절, 근사 규율, 그리고 상법 사항 등에 대해서 가르치십시오.

(S (NP-SBJ *pro*) (VP (S (NP-SBJ *pro*)) (VP (NP-COMP (NP (NP 위수/NNC 규정/NNC) /SCM (NP (NP 보초/NNC+의/PCJ) (NP 감시병/NNC+의/PCJ) (NP 직업병/NNC+의/PCJ)) (NP 근무/NNC 포장/NNC)) /SCM (NP 근태/NNC 예절/NNC) /SCM )/SCM)
5.4 Transitive Verb with a complement NP

Some transitive verbs take an NP complement in addition to an NP object.

Some transitiv ev erbs tak e an NP complemen t in addition to an NP ob ject.

In addition, this subcategorization frame includes constructions that are similar to English small clauses. In these constructions, the two internal NP arguments cannot be deleted.
\section*{5.5 Double Nominative Verb}

Some verbs such as ‘되다’ require two nominative arguments. The first nominative element is treated as the subject and the second nominative element is treated as the complement.

\begin{verbatim}
(S (NP-SBJ 지의/NPN
  포대/NNC+잡/PCA)
  (VP (ADV 토儿/ADV)
   (NP-ADV 속지/NNC
    경연/NNC+역서/PAD)
   (VP (NP-COMP 속지/NNC+잡/PCA)
    되/VV+었/EPF+습니다/EFN))
 ./SFN)
\end{verbatim}

Note that the above construction should be differentiated from the cases where both of the nominatives serve as subjects. See §11 for more on double nominative construction.

\begin{verbatim}
(S (NP-SBJ 그 소태/NAN
  경사/NNC
  속격수/NNC+는/PAU)
  (S (ADV 딸서/ADV)
   (S (NP-SBJ 그/NAN
    경사/NNC+잡/PCA)
    (VP 죽/VV+었/EPF+습니다/EFN)))
 ./SFN)
\end{verbatim}

\section*{5.6 Predicative Nominal: Copula}

In copular constructions, the predicative NP is directly projected to a VP.

\begin{verbatim}
(S (NP-SBJ 그 소태/NAN
  경사/NNC
  속격수/NNC+는/PAU)
  (S (ADV 펑서/ADV)
   (S (NP-SBJ 그/NAN
    경사/NNC+잡/PCA)
    (VP 죽/VV+었/EPF+습니다/EFN)))
 ./SFN)
\end{verbatim}
5.7 Adjective

Intransitive adjectival predicates do not take any internal arguments.

5.8 Adjective with a complement NP

Some adjectival predicates such as ‘타르다, 갈다’ take an NP complement.

5.9 Double Nominative Adjective

Some adjectives such as ‘있다, 안니다, 좋다, 싫다, 필요하다’ etc. take an NP with a nominative case marker as a complement. In such cases the NP complement is tagged with -COMP.
어떤 경우에는 제한된 시점에서도 철수가 필요합니다.

(S NP-SBJ *pro*)
(ADJP (NP-ADV 영전/DAN
경우/NNC+에이/PAU)
(NP-ADV (S (WHNP-1 *op*)
(S (NP-SBJ *T*-1)
(VP (VV 제안/NNC+되/NSV+/로/EAN)))
(NP 심정/NNC+에이/PAU)))
(ADJP (NP-COMP 철수/NNC+의/PCA)
(VJ 필오/NNC+에/NSJ+에 닿/EFN)))

한국 사람은 대체로 예절이 밝습니다.

(S NP-SBJ 한국/NPR
 사람/NNC+은/PAU)
(ADJP (ADVP 대체로/ADV)
(ADJP (NP-COMP 예절/NNC+의/PCA)
 박지/VJ+더 닿/EFN)))

Note that these constructions should be differentiated from those where both of the nominatives are treated as subjects and tagged as -SBJ. For more discussion on double nominative constructions, see § 11.

이 곤수 공장은 상당히 규모가 크다.

(S NP-SBJ 이/DAN
곤수/NNC
공장/NNC+은/PAU)
(S (ADVP 상당히/ADV)
(S (NP-SBJ 규모/NNC+의/PCA)
(ADJP 이/VJ+의/EFN)))

6 Noun Phrases

6.1 Noun-noun compounds

In general, compounds that are formed with nouns are left flat and is labeled as NP.

R-116 무진기각
6.2 NP modifiers

NP modifiers adjoin onto the noun they are associated with.

그 무전 기의 총선 기는

(NP-SBJ (NP 무전 기/NNC+ 의/PCA)
  (NP 총선 기/NNC+ 는/PAU))

6.3 Relative clause constructions

6.3.1 Argument relative clause constructions

Argument relative clause constructions have a gap in an argument position of the relative clause which is semantically associated with the head noun. The head noun is labeled as NP, and the relative clause is labeled as S. The relative clause projects to S whose specifier contains an empty operator labeled as WHNP. This S adjoins onto the head noun NP. The gap in the relative clause is represented as a trace *T* and this trace is coindexed with the WHNP that contains the empty operator *op*.

고장난 수선 기는

(NP (S (WHNP-1 *op*)
  (S (NP-SBJ *T*-1)
    (VP 고장난/VV+/PAU))
  (NP 수선 기/NNC+ 는/PAU))

어제 쓰는 140 미터 방사포를 설치한 절-151 트럭 쓰레기를 보았습니다.

(S (NP-ADV 어제/NNC)
  (S (NP-SBJ 쓰기/NPN+ 는/PAU)
    (VP (NP-OBJ (S (WHNP-1 *op*)
      (S (NP-SBJ *pro*)
        (VP (NP-OBJ 140/NNU
          (V 장비/NNX
            방사포/NNC+ 들/PCA)
          (NP-COMP *T*-1)
          (VV 설치/NNC+ 알/XSV+/PAU))))
        (NP 트럭/NNC
          쓰기/NNU
            때/NNX+ 들/PCA))
        보/VV+/PAU/EFN+ 았/EPF+ 습니라/EFN))
  /SFN)
6.3.2 Relativization out of multiple nominative/accusative clauses

The highest NP in a multiple nominative/accusative construction can undergo relativization. Be sure to properly coindex the gap position with the relative operator (see §11 for multiple nominative constructions and §12 for multiple accusative constructions).

(\(NP \ (S \ (WHNP-1 \ *op*)\))
  (\(S \ (NP-SBJ \ *T*-1)\))
  (\(S \ (NP-SBJ \ 鹑/NNC+ões/PCA)\))
  (\(ADJP \ 鹑/VJ+ões/ /EAN)\))
  (\(NP \ 鹑\))

6.3.3 Relativization out of a complex noun phrase construction

In ‘鹑 珥’ constructions, sometimes an NP contained in the complement clause of ‘鹑’ seems to have undergone relativization. Since ‘clause + 鹑’ is a complex NP, we would not expect such relativization to be possible given what we know about movement constraints, island effects and so on.

Although there may be something more complex going on in such constructions, for annotation purposes, simply put a trace in the complement clause (if the relativized NP is an argument of the clause) and coindex this trace with the empty relative operator.

\[\text{제가 기역할 수 있는 건 밝장없이 닥 말씀 드셨습니다.}\]

\(S \ (NP-SBJ \ *pro*)\)
  (\(VP \ (NP-OBJ \ (S \ (WHNP-1 \ *op*)\))\))
  (\(S \ (NP-SBJ \ (S \ (NP-SBJ \ 鹑/NPN+ões/PCA)\))\))
  (\(VP \ (NP-OBJ \ *T*-1)\))
  (\(VV \ 鹑/NNC+ões/XSV+ões/ /EAN)\))
  \(NP \ 鹑/NNX)\)
  (\(ADJP \ 鹑/VJ+ões/ /EAN)\))
  \(NP \ 鹑/NNX+ões/ /PAU)\)
  (\(VP \ ADVP \ 밝장없이 ADV)\)
  (\(ADVP \ 답/ADV)\)
  (\(VP \ 말씀 드셔/VV+ões/EPF+تضمن/EFN)\))

/\(SFN)\)

6.3.4 Adjunct relative clause constructions

In adjunct relative clause constructions, an adjunct NP has been relativized. That is, the head noun is semantically associated with an empty adjunct in the relative clause. The bracketing guidelines for adjunct relative clause constructions are essentially the same as argument relative clause constructions, except in adjunct relative clause constructions, trace *T* is not represented.

\[\text{그 무전가가 고장난 원인이 무엇인가?}\]
6.3.5 Internally headed relative clause constructions

In internally headed relative clause constructions, the head of the relative clause is inside the relative clause (i.e., internal head of the relative clause), and it is semantically associated with the head noun of the relative clause which is instantiated as ‘그’. The bracketing guideline for such constructions is essentially the same as the argument relative clauses, except you should coindex the relative pronoun operator (WHNP) with the internal head of the relative clause.

\[
(S (NP-SBJ (S (WHNP *op*)))
(S (NP-SBJ 감/DAN
  무친 가/NNC+ 걷/PCA)
  (VP 감당책/VV+을/EAN)))
(NP 원인/NNC+의/PCA))
(VP (NP 무엇/NPN+ 아니/CO+을 걷/EFN))
)?/SFN
\]

\[
(S (NP-ADV (S (WHNP *op*)))
(S (NP-SBJ 왜/NPN+ 걷/PCA)
  (VP (NP-COMP 5/NNU
    중태/NNC+에/PAD)
    (VP (NP-ADV 처음/NNC)
      (VP 왜/VV+을/EPF+을/EAN))))
(NP 왜/NNC+는/PAU))
(NP-COMP-2 중태/NNC+에/PAD)
(S (NP-SBJ (S (WHNP-1 *op*)))
(S (NP-SBJ *pro*)
  (VP (NP-OBJ-1 왜/NNC+을/PCA)
    (VP (NP-ADV 처음/NNC+으로/PAD)
      (VP 왜/VV+을/EAN))))
(NP 왜/NNC+의/PCA))
(ADJP (NP-COMP *T*-2
  없/VJ+을/EPF+습니다/EFN))
./SFN
\]

In ternally headed relative clause constructions, the head of the relative clause is inside the relative clause (i.e., internal head of the relative clause), and it is semantically associated with the head noun of the relative clause which is instantiated as ‘그’. The bracketing guideline for such constructions is essentially the same as the argument relative clauses, except you should coindex the relative pronoun operator (WHNP) with the internal head of the relative clause.

제가 5 중태에 처음 왔을 때는 단염하려 했지만 듣기 좋은 영어 듣기 없었습니다.

\[
(S (NP-ADV (S (WHNP *op*)))
(S (NP-SBJ 왜/NPN+ 걷/PCA)
  (VP (NP-COMP 5/NNU
    중태/NNC+에/PAD)
    (VP (NP-ADV 처음/NNC)
      (VP 왜/VV+을/EPF+을/EAN))))
(NP 왜/NNC+는/PAU))
(NP-COMP-2 중태/NNC+에/PAD)
(S (NP-SBJ (S (WHNP-1 *op*)))
(S (NP-SBJ *pro*)
  (VP (NP-OBJ-1 왜/NNC+을/PCA)
    (VP (NP-ADV 처음/NNC+으로/PAD)
      (VP 왜/VV+을/EAN))))
(NP 왜/NNC+의/PCA))
(ADJP (NP-COMP *T*-2
  없/VJ+을/EPF+습니다/EFN))
./SFN
\]

In ternally headed relative clause constructions, the head of the relative clause is inside the relative clause (i.e., internal head of the relative clause), and it is semantically associated with the head noun of the relative clause which is instantiated as ‘그’. The bracketing guideline for such constructions is essentially the same as the argument relative clauses, except you should coindex the relative pronoun operator (WHNP) with the internal head of the relative clause.

\[
(S (NP-SBJ (S (WHNP *op*)))
(S (ADVP 공부/ADV)
  (S (NP-SBJ *pro*)
    (VP (NP-OBJ *T*-1
      말씀드리/VV+을/EAN))))
(NP 감/DAN
  무친 가/NNC+들/XSF))
(VP 말/VV+을/ECS))
\]

공부 말씀드린 그 부대들 말고 다른 부대들에 대한 정보는 가진 게 막막도 없습니다.
Across-the-Board (ATB) relativization

Conjoined clauses can each have a gap that is semantically associated with a single head noun. In this case, the conjoined clauses project to S whose specifier contains an empty operator labeled as WHNP. Moreover, the gap in each conjunct is represented as a trace and it is coindexed with the empty operator.

한 개의 두 개의 문장은 하나의 문장으로 조작하는 모든 문장들을 말한답니다.

(S (NP-SBJ 개인/NNC
  화기/NNC+탄/PAU))
(S (NP-OBJ (S (WHNP-1 *op*))
  (VP (NP-OBJ (S (NP-SBJ 개인/NNC+의/PCA)
    (VP (NP-OBJ *T*-1)
      (VV 용택/NNC+약/XSV+의/ECS))))
  (S (NP-SBJ *pro*)
    (VP (NP-ADV 온작/NNC+서/PAU)
      (VP (NP-OBJ *T*-1)
        (VV 조작/NNC+약/XSV+는/EAN)))))))
(S (NP 모든/DAN
  화기/NNC+탄/PAU))
  말약/VV+ㄷ/EFN)
./SFN)

모든 사람들은 학교에 갈 수 있는데 사회 안전한도 있습니다.

(S (NP-SBJ (S (WHNP-1 *op*))
  (S (NP-SBJ *T*-1)
    (VP (NP-OBJ 모터사이클/NNC+열/PAU)
      (VV VV+열/ECS))
  (S (NP-SBJ *T*-1)
    (VP (VV 순찰/NNC+약/XSV+는/EAN))))
(NP 言語/NNC
     言語原/NNC+보/PAU))
     (ADJP 없/VJ+없/EFN)
./SFN)

6.3.7 Relative clauses with Determiner

Determiners adjoin onto the NP containing the head noun and the relative clause.

이 빨간 선들이 도토리.

(S (NP-SBJ (DANP 은/DAN)

   (NP (S (WHNP-1 *op*)

       (S (NP-SBJ *T*-1)

           (ADJP 발장/VJ+ㄴ/EAN)))))

   (NP 선/NNC+들/XSF+을/PCA))

   (VP (NP 도/NNC+을/CO+을/EFN))

./SFN)

6.4 Complex noun phrases

A complex noun phrase is similar to a relative clause construction in that it is composed of a head noun and a clause that is associated with the head noun. But it differs from the relative clause construction in that it does not have a gap in the clause that is semantically associated with the head noun. Similarly to relative clause constructions, the head noun is labeled as NP, the clause is labeled as S, and this S adjoins onto the head noun NP. But unlike relative clause constructions, the clause in complex NPs does not project to an S whose specifier contains an empty operator.

6.4.1 When the head is a common noun

R-116  무언/가 5종 텍에 지급된다는 소식

(NP (S (NP-SBJ R-116/NFW

   무언/NNC+가/PCA)

   (VP (NP-COMP 5/NNU

       중/NNC+ㄹ/EPAD)

       (VV 지급/NNC+을/XSV+을/타는/EAN)))))

   (NP 소식/NNC+은/PAU))

Some common nouns that frequently occur as heads of a complex NP include ‘경우, 동안, 우, 다름, 정도’, etc.

6.4.2 When the head is a dependent noun

- Clause + ‘가’

When ‘가’ is a head of a complex NP, it can denote a proposition.
그 사람들의 군복을 얻고 있는 것이 눈에 띄었기 때문요.

(S (NP-SBJ (S (NP-SBJ 그/DAN 사람/NNC+들/XSF+의/PCA))
 (VP (VP (NP-OBJ 군복/NNC+을/PCA)
   없/VV+없/EAU))
   없/VX+있/EAN))
 (VP (NP-II/NNX+의/PCA))
 (VP (NP-COMP 눈/NNC+에/PAI)
   틀/VV+있/EPF+기능/EFN)
 ./SFN)

'것' can also be a head of a relative clause. In this case, '것' usually denotes 'thing'.

제가 본 것은 그것뿐입니다.

(S (NP-SBJ (S (WHNP-1 *op*)
 (S (NP-SBJ 우리/NPN+의/PCA)
 (VP (NP-OBJ *T*-1)
 보/VV+있/EAN))
 (NP 없/NNX+을/PAU))
 (VP (NP 우리/NPN 본/NNX+의/CO+에 닿/EFN))
 ./SFN)

Note that '것이 다' as a whole can be an auxiliary predicate, contributing future tense or irrealis modality. In this case, the verb preceding '것이 다' is inflected with '고/을'.

아마 우리 떡볶이 공격 시에 그 도토리를 사용하기로 되어 있었을 것입니다.

(S (ADV 우리/ADV)
 (S (NP-SBJ 우리/NPN 떡볶이/NNC+의/PCA)
 (VP (VP (VP (NP-ADV 우리/NPN 것/NNC+의/PAI)
 (VP (NP-OBJ 그/DAN 도토/NNC+을/PCA)
 (VV 사용/NNC+의/XSV+의/EC5)))
 되/VX+있/EAU)
 없/VX+있/EPF+을/EAN)
 (VX 없/NNX+의/CO+에 닿/EFN)))
 ./SFN)

• Clause + '데', '일'

건전한 것을 보충받는 데는 적절히는 일이 없지요.

(S (NP-ADV (S (NP-SBJ *pro*)
 (VP (NP-OBJ 건전/NNC+을/PCA)
 (VV 보충/NNC+할/XSV+이/EAN)))
 (NP 데/NNX+를/PAU))
Note that ‘ generado can also be a head of a relative clause. In this case, ‘ generado usually denotes ‘place’.

In general, the function tag for the NP headed by ‘ generado is -SBJ.

In general, the function tag for the NP headed by ‘ 작 is -COMP. This is to capture the intuition that ‘ 작 implies the presence of an experiencer, which in turn implies the presence of an external argument, the subject of the clause.
6.5 Nominalized clauses: gerunds

Gerunds are clauses headed by a nominalized verb or adjective (i.e., a verb or an adjective with a nominalizer ending such as ‘의’ or ‘을’). They behave as an NP within the matrix clause in that they can be the subject or the object of the matrix clause. They are labeled as S and then projected to an NP with the relevant function tag.

보고서를 작성하기가 어렵다.

(S (NP-SBJ (S (NP-SBJ *pro*)))
 (VP (NP (S (NP-OBJ 보고사/NNX+의/PCA)
 (VV 작성/NNC+의/XSV+의/ENM+의/PCA)))))
 (ADJP 어려워/VJ+있다/EFN))
 ./SFN)

6.6 Equative NP

When ‘즉’ is equating two or more NPs, it should be part-of-speech tagged as ADC, and the NPs associated with ‘즉’ should be conjoined.

2 덕의 부동래장, 즉 정치 부동래장과 군사 부동래장이 있슴니다.

(S (NP-SBJ (NP (NP 2/NNU
 명/NNX+의/PCA)
 (NP 부동래장/NNC)))
 ./SCM
 (ADCP 즉/ADC)
 (NP (NP 정치/NNC
 부동래장/NNC+의/PCJ)
 (NP 군사/NNC
 부동래장/NNC+의/PCA)))
 (ADJP 없/VJ+있다/EFN))
 ./SFN)
7 Verb Phrases

7.1 Verb complementation

Internal arguments are complements of verbs.

모출 데요들 받았음 닥。

(S (NP-SBJ *pro*)
  (VP (NP-OBJ 모출/NNC
       데요/NNC+을/PCA)
       받/VV+었/EPF+습 닥/EFN))
./SFN)

사령관에게 보고서를 보냈다.

(S (NP-SBJ *pro*)
  (VP (NP-COMP 사령관/NNC+에게/PAD)
       (NP-OBJ 보고서/NNC+을/PCA)
       보내/VV+었/EPF+습 닥/EFN))
./SFN)

But when there is a verb modifier intervening between the internal argument and the verb, the verb is labeled as VP, and the modifier adjoins to this VP. And then the internal argument adjoins to the VP to which the modifier attaches.

모출 데요들 많이 받았음 닥。

(S (NP-SBJ *pro*)
  (VP (NP-OBJ 모출/NNC
       데요/NNC+을/PCA)
       (VP (ADVP 많이)
       (VP 받/VV+었/EPF+습 닥/EFN)))))
./SFN)

7.2 Auxiliary predicates

7.2.1 Auxiliary verbs

Auxiliary verbs take the highest VP (or AP) in the clause as their complements, and auxiliary verbs and their complement VP (or AP) are labeled as VP.

그 무진기의 송신기는 눈 뱃으로 구성되어 있거?

(S (NP-SBJ (NP  그/DAN
       무진기/NNC+의/PCA)
       (NP 송신기/NNC+는/PAU))
       (VP (NP-COMP 무엇/NPN
             무엇/NPN+으로/PAD)
7.2.2 Sentences with more than one auxiliary verbs

The innermost auxiliary verb takes the VP as its complement, projecting to a VP. And then the outer auxiliary verb takes this VP as its complement, projecting to another VP, and so on.

왜 그 도토 상에서 지뢰를 탐지하Navbar 나 되어 있었지?

(S (NP-SBJ (S (WHNP-1 *op*)
            (S (NP-SBJ *T*-1)
                (VP (NP-OBJ 산재/NNC 작/NNC+을/PCA)
                     가/NV+/이/EAU)))
                (VP 산 재/NNC+을/XSF+의/PCA))
            (VP (ADJP 고침개/ADV)
                (ADJP 많/VP+지/EAU))
                앞/VX+ NXT/EFN)
?/SFN)

7.2.3 Auxiliary adjectives

Auxiliary adjectives such as ‘만큼, 득, 많, 급한’ take the highest VP (or AP) in the clause as their complements, and auxiliary adjectives and their complement VP (or AP) are labeled as VP.

그건 R-116 무전기로 동일 말하다.

(S (NP-SBJ 그건/NPN+은/PAU)
  (VP (VP (NP-ADV R-116/NFW
          무전기/NNC+은/PAU)
          (VP 동/VP+으로/EAN)
          말/VP+할/EFN))
?/SFN)
7.2.4 Auxiliary predicative nouns

Auxiliary predicative nouns such as ‘것이 닥, 봄의 닥, 턱의 닥’ contribute modal or aspectual interpretation. They are labeled as VX and take the highest VP (or AP) in the clause as their complements. Further, auxiliary predicative nouns and their complement VP (or AP) are labeled as VP.

6 종태에서는 언제 무전기를 고쳐할 건가?

(S (NP-ADV 6/NNU 종태/NNC+어/=/PAD+는 /PAU)
 (S (NP-SBJ pro+))
 (VP (VP (NP-ADV 언제/NNC)
   (VP (NP-OBJ 무전기/=/NNC+을 /PCA)
   (VV 고 /NNC+어/=/XSV+요 /EAN)))
 (VX 것/NNX+어/=/CO+더 /EFN)))
 ./SFN)

이 선들은 연인군 직도에 있는 것보다 약 1.5도 좀 닥을 봄의 닥.

(S (NP-SBJ 이 DAN
 선/NNC+을 /XSF+은 /PAU))
 (VP (ADJP (NP-ADV (S (WHNP-1 *op+))
   (S (NP-SBJ *T*1))
   (ADJP (NP-COMP 연인군/NNC
     직도/NNC+어/=/PAU)
     염/VJ+는 /EAN))))
 (NP 것/NNX+보며/=/PAD)))
 (NP-ADV 야 /DAN
 1.5/NNU
 도 /NNX+품 /XSF)
 (ADJP 닥 /VJ+요 /EAN)))
 (VX 봄/NNX+어/=/CO+더 /EFN))
 ./SFN)

직도가 있으면 제가 그걸 찾아 낼 수 있을텐데요.

(S (S (NP-SBJ 직도/NNC+어/=/PCA)
 (ADJP 염 /VJ+으/=/ECS)))
 (S (NP-SBJ (S (NP-SBJ 재/NPN+어/=/PCA)
   (VP (VP (NP-OBJ 재/NPN+을 /PCA)
     찾 /VV+어/=/EAU)
     날/VX+고 /EAN)))
 (NP 재 /NNX)))
 (VP (ADJP 염 /VJ+요 /EAN)
 (VX 재/=/NNX+어/=/CO+더 /EFN))))
 ./SFN)

아간 명군을 알 테니까 그 기락는 약 1 걸로먹으면 될 것같다.
7.2.5 Complex auxiliary predicate

Complex auxiliary predicates such as ‘가락’ occur at the end of clauses and corresponds in meaning to English raising predicates such as ‘seem’ and ‘be likely’. Label such predicates as VX and treat them as an auxiliary predicate.

7.3 Light verb

Light verbs occur with an activity-denoting noun. They are called ‘light’ because they do not seem to have much semantic content and do not seem to contribute subcategorization information. Rather, in sentences with light verbs, the subcategorization information come from the activity denoting noun. We refer to this activity denoting noun as the ‘base noun’ of the light verb.

The most common light verb is ‘할’. It follows a Sino Korean noun (Chinese origin nouns) which can be marked with accusative case marker.

<table>
<thead>
<tr>
<th>Light Verbs</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>수먹을 하락</td>
<td>수먹은 하락</td>
</tr>
<tr>
<td>손질을 하락</td>
<td>손질은 하락</td>
</tr>
<tr>
<td>보고를 하락</td>
<td>보고는 하락</td>
</tr>
<tr>
<td>필요로 하락</td>
<td>필요로는 하락</td>
</tr>
</tbody>
</table>
Some other light verbs include ‘讷다’, ‘익다’ and ‘발다’. ‘讷다’ occurs with a nominative marked NP, and ‘발다’ occurs with an accusative marked NP.

A light verb is labeled as LV, and its base noun is labeled as NP with the appropriate function tags. If the base noun can have accusative case marker, the function tag is -OBJ, and if it can have nominative case marker, the function tag is -COMP. This base noun is further tagged with -LV.

그들은 무전기를 테택 통신 소택에서 수리를 합니다.

(S (NP-SBJ 그들은)
 (VP (NP-OBJ 무전기/NNC+을/PCA)
  (VP (NP-ADV 테택/NNC
   통신/NNC
   소택/NNC+에서/PAD)
  (VP (NP-OBJ-LV 수리/NNC+을/PCA)
   (LV 악/VV+을/나다/EFN)))))
 ./SFN)
If the base noun is modified, -LV tag should be given to the highest projection of the base noun.

In many cases, determining whether a verb is a light verb is very difficult. When in doubt, treat the verb in question as a regular verb and do not label it as LV.
7.4 Compound verb

Compound verbs are labeled as CV. The first verb of compound verbs ends with ‘-어/-약’ and it cannot have tense morphemes. The second verb belongs to a certain class of verbs that has a directional meaning, such as ‘가다, 오다, 나가다, 날다, 달니다’.

그는 집공관을 갈아 넘겼다.

(S (NP-SBJ 그는)
 (VP (NP-OBJ 집공관/NNC+을/PCA)
  (CV 갈/VV+어/ECS
    남/VV+있/EPF+다/EFN))
 ./SFN)

아마 너를 감옥에 잡아 넋기까지 알지도 몰だろう.

(S (NP-SBJ *pro*)
 (VP (VP (ADVP 작/ADV)
    (VP (NP-OBJ (S (NP-SBJ *pro*)
      (VP (NP-OBJ 너/NNP+을/PCA)
       (NP-COMP 감옥/NNC+으로/PAD)
        (CV 잡/VV+어/ECS
         남/VV+있/ENM+어/PAU))))
      앉/VV+어/ECN+도/PAU))
    모/VV+어/EFN)
./SFN)

7.5 VP modification

Verb modifiers adjoin onto the lowest VP they are associated with.

우리는 무진 가름 오랫동안 포착하지 못합니다.

(S (NP-SBJ 우리/NNP+는/PAU)
 (VP (VP (NP-OBJ 우리/NNP+을/PCA)
    (VP (NP-ADV 오랫동안/NNC)
     (VP (VV 포착/NNC+어/XSV+지/EAU))))
  못/VV+비/EFN)
 ./SFN)

포로를 잡으면 지체없이 보고해야 합니다.

(S (S (NP-SBJ *pro*)
 (VP (NP-OBJ 포로/NNC+을/PCA)
  잡/VV+은/ECS))
 (S (NP-SBJ *pro*)
 (VP (VP (ADVP 지체없이/ADV)
    (VP (NP-OBJ *pro*))
 ./SFN)
When there are more than one verb modifiers, they attach to the same VP level.

부데 명칭은 동영상보고 약달닙니다.

(S (NP-SBJ 부대/NNC
명칭/NNC+은/PAD)
(VP (ADVVP 동상/ADV)
  (NP-ADV 약오/NNC+토/PAD)
  (VP (VV 약달/NNC+되/XSV+ㅂ니다/EFN)))
./SFN)

7.6 Derived verb

For derived verbs, the stem is part-of-speech tagged as NNC and the derivation suffix is part-of-speech tagged as XSV. The derived verbs are labeled as VV in syntactic bracketing.

보고 았었다

(VV 보고/NNC+었/XSV+였/EPF+꼈다/EFN)

보고되었었다

(VV 보고/NNC+되었/XSV+였/EPF+꼈다/EFN)

In some cases, derived verbs have conjoined noun stems. Treat them as coordinated verbs.

직위 동솔안타.

(VV (VV 직위/NNC)
  (VV 동솔/NNC+었/XSV+있다/EFN))

승격 막わけで타.

(VV (VV 승격/NNC)
  (VV 막데/NNC+었/XSV+있다/EFN))

8 Adjective Phrase

Adjectives project to AP. If an adjective has a complement, the adjective and the complement are labeled as AP. Adjective modifiers adjoin onto the AP.

낮의 덕타.

(S (NP-SBJ 낮/NNC+의/PCA)
The stem of derived adjective is part-of-speech tagged as NNC and the derivation suffix is part-of-speech tagged as XSJ. The derived adjectives are labeled as VJ in syntactic bracketing.

유영하다

(VJ 유영/NNC+ 악/XSJ+ 다/EFN)

9 Adverb Phrase

Adverbs are part-of-speech tagged with ADV, and they are bracketed with the label ADVP.

말려

(ADVP 말려/ADV)

9.1 Adjunction site of adverb phrase

Adverb phrases (ADVPs) in general adjoin onto VP, ADJP or S.

전투해서는 통신망을 잘 읽은 행이야 합니다.

(S (NP-ADV 전투/NNC 사/NNX+에/PAU+는/PAU) (S (NP-SBJ *pro*) (VP (VP (NP-OBJ 통신/NNC+을/PCA) (ADJP (ADVP 행/ADV) (ADJP 읽/ADJP))))) ./SFN)
Sometimes an adverb modifies another adverb, especially adverbs of degree such as ‘너무, 약간, 매우, 더, 약간’. In the example below, ‘너무 난도’ does not modify the verb but rather the following adverb ‘작게’.

그 친구들이 말을 너무 난도 작게 했다.

Moreover, a few adverbs can adjoin to a limited number of noun phrases and limited number of adnominal phrases.

9.2 Derived adverbs

In general, adjectives suffixed with ‘-게’ are derived adverbs (e.g., ‘작게’) and are bracketed with the label ADV first and then bracketed with the label ADVP.

그 친구들이 말을 너무 난도 작게 했다.

(S (NP-SBJ 그/DAN 친구/NNC+들/XSF+의/PCA)
   (VP (NP-OBJ 말/NNC+을/PCA)
       (VP (ADVP 너무 난도/ADV+도/PAU)
           (ADVP ADV 작/VJ+게/ECS))
       (VPワーク/FF+으로/EFN)))
./SFN)

(S (NP-SBJ 그/DAN 친구/NNC+들/XSF+의/PCA)
   (VP (NP-OBJ 말/NNC+을/PCA)
       (VP (ADVP 너무 난도/ADV+도/PAU)
           (ADVP ADV 작/VJ+게/ECS))
       (VPワーク/FF+으로/EFN)))
./SFN)
Nouns suffixed with ‘-적으로’ are also derived adverbs.

단개적으로

(ADVP (ADV 단개/NNC+적으로/XSF/으로/PAD))

Note, however, that this does not entail that the nouns suffixed with ‘-적’ is treated as an adjective. They are simply treated as a NP.

전면적으로

(NP-OBJ (NP 전면/NNC+적으로/XSF)
  (NP 전방/NNC
   이동/NNC+으로/PCA))

9.3 Adverb with an NP complement

Some adverbs such as ‘아래, 건, 달리, 갈다, 함께, 둘론’ take an NP complement to form an adverb phrase.

앞면 직원 부대도 아래

(ADVP (NP-COMP 앞면/NNC
  직원/NNC
  부대/NNC+으로/PAD)
  아래/ADV)

고등 학생과 대학생은 둘론

(ADVP (NP-COMP (NP 고등/NNC
  학생/NNC+으로/PCJ)
  (NP 대학생/NNC+은/PAU))
  둘론/ADV)

이와 같아

(ADVP (NP-COMP 이/NPN+니까/PAD)
  같이/ADV)

In some cases, NPs functioning as adverbials also take an NP complement.

그 부분은 장갑착을 핵심으로 편성돼 있습니다.
10 Copular Sentences

In copular sentences, a noun with a copula marker (‘는’) is the predicate. The predicative noun is labeled as NP, and this NP projects to VP. Auxiliary predicates take this VP as a complement.

R-106도 소련에 입니다.

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN)))
 ./SFN)

R-106도 소련에 들어갑니다.

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (VP (NP 소련에/NNC+에/CD+에/EFN))
  았/VX+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련에/NNC+에/CD+에/EFN))
 ./SFN)
11 Multiple Nominative Constructions

11.1 Complement NP with nominative case

There are verbs and adjectives that take a nominative-case marked NP as their complement. Examples include 되다, 아니다, 필요하다, 좋다, 싫다, ‘있다’ (have, possess), ‘없다’ (not have, not possess).

In sentences with such verbs and adjectives, the subject NP has function tag -SBJ, and the complement NP has function tag -COMP.

그 것이 문제가 되었다.

(S (NP-SBJ 그 것/NPN+의/PCA)
  (VP (NP-COMP 문장/NNC+의/PCA)
     되/VV+있/EPF+있/EFN)
  ./SFN)

그것이 문제가 아니었다.

(S (NP-SBJ 그 것/NPN+의/PCA)
  (ADJP (NP-COMP 문장/NNC+의/PCA)
     아니/VJ+있/EFN)
  ./SFN)

철수가 장갑이 었다.

(S (NP-SBJ 철수/NPR+의/PCA)
  (ADJP (NP-COMP 장갑/NNC+의/PCA)
     없/VJ+있/EFN)
  ./SFN)

철수가 장갑이 없었다.

(S (NP-SBJ 철수/NPR+의/PCA)
  (ADJP (NP-COMP 장갑/NNC+의/PCA)
     없/VJ+있/EFN)
  ./SFN)

지금도 기기에 어떤 부분이 있는지는 의심스럽습니다.

(S (NP-SBJ *pro*)
  (VP (S-COMP (NP-ADV 지금/NNC+의/PAU)
       (NP-COMP-1 가지/NPN+은/PAU))
    (S (NP-SBJ 의심/NPN+은/PCA)
     부정/NNC+의/PCA)
    (ADJP (NP-COMP *T*-1)
     없/VJ+는/PAU)
    (VJ 의심/NNC+은/XSJ+있/EFN)))
  ./SFN)
All adjectives and some stative verbs can have multiple nominative-case marked NPs. One of the
NPs attaches to S, in general the one closest to the adjective, and other NPs adjoin onto S. All the
nominative-marked NPs have -SBJ function tag. This treatment of multiple subjects in adjective
constructions is to capture the intuition that an adjective forms a sentence with a nominative-
marked NP and this sentence in turn forms a predicate and takes another nominative-marked NP
as its own subject.

Adjectives such as `어떻든, 싫든’ can take a clausal unit containing a nominalized verb as the
second NP. Often the object of this clause is semantically coreferential with the subject of these
adjectives.

Compare the above example with the following one, where NP `어떤 직책’ is marked with an
accusative case. In this example, the noun phrase belongs to the nominalized clause, which is the
subject of the entire sentence. The sentence is not a multiple nominative construction.
12 Multiple Accusative Constructions

Some sentences can have more than one accusative-case marked NPs even though they do not contain a ditransitive verb. In this case, one of the accusative-marked NPs attaches to VP as a complement of the verb, in general the one closest to the verb, and other accusative-marked NPs adjoin to the VP. All the accusative-marked NPs have -OBJ function tag.

주가적으로 군관들이 정치 군관을 동양을 조사합니다.

(S (ADVP (ADV 주가리/NNC+적/XSF+으로/PAD)))
(S (NP-SBJ 군관/NNC+들/XSF+으로/PCA)
  (VP (NP-OBJ 정치/NNC 군관/NNC+을/PCA)
   (VP (NP-OBJ 동양/NNC+을/PCA)
    (VV 조사/NNC+와/XSV+니 닥/EFN))))
 ./SFN)

When one of the accusative marked NPs occurs in the beginning of the sentence, this NP is treated as if it has undergone argument fronting (i.e., scrambling). That is, it is adjoined to the clause level S and it is coindexed with a *T* in the base position which is adjoined to VP. More on argument fronting is presented in §14.

정치 군관은 주가적으로 군관들이 동양을 조사합니다.

(S (NP-OBJ-1 정치 군관은)
  (ADVP (ADV 주가리/NNC+적/XSF+으로/PAD)))
(S (NP-SBJ 군관/NNC+들/XSF+으로/PCA)
  (VP (NP-OBJ *T*-1)
   (VP (NP-OBJ 동양/NNC+을/PCA)
    (VV 조사/NNC+와/XSV+니 닥/EFN)))))
 ./SFN)

13 Floating numerals

Numerals that semantically modify a subject NP can occur after the subject NP. These numerals can also take a nominative case marker, giving one the illusion that the sentence has multiple subjects. We treat such numerals as verb modifiers and mark them with -ADV function tag.

우천왕이 두 개가 있습니까.
When the subject that does not have a case marker is immediately followed by a numeral, bracket the subject and the numeral as NP.

Numerals that are associated with an object NP can also occur after this object NP and they can also take accusative case marker, giving you the illusion that the sentence has double objects. We treat such numerals as verb modifiers and mark them with -ADV function tag.

In cases where the subject or the object is absent, and only the numerals are present, in general, the empty subject and the object are represented as *pro*, and the numerals are adjoined to the predicate.

However, depending on the context and the annotator’s intuition, the numeral itself can be represented as the subject or the object of the predicate.
Fronted elements are those that appear before the subject, but interpreted somewhere else in the clause. They are adjoined onto the top clause level S.

Fronted arguments are adjoined to the main clause level. They always leave a *T* and are coindexed with it.

Across-the-Board fronting

A fronted argument can originate from conjoined clauses. In this case, the conjoined clauses each have a trace that is syntactically associated with the fronted argument which is adjoined to the conjoined S.
14.3 Fronted adjuncts

Fronted adjuncts do not leave a *T*. They are adjoined to the top clause level S.

When there are more than one adjuncts preceding a clause S, they attach to the same S level.

When both a fronted argument and an adjunct is preceding a clause S, they attach to the same S level.
15 Causatives

Causatives are biclausal. The subject is the causer and the sentential complement denotes the situation the causer caused to bring about. There are two ways in which the causee can be represented syntactically: (i) as the subject of the complement clause, or (ii) as the object or the complement of the main clause.

15.1 Causee is the subject of the complement clause

In this case, the causative verb takes only an S-COMP argument, and the causee is represented as the subject of this S-COMP clause. The verbal ending of the S-COMP clause is usually ‘도록/ECS’ or ‘할/ECS’.

(15.1.1) Causative is the subject of the complement clause

In this case, the causative verb takes only an S-COMP argument, and the causee is represented as the subject of this S-COMP clause. The verbal ending of the S-COMP clause is usually ‘도록/ECS’ or ‘할/ECS’.

15.2 Causee is the object or complement of the main clause

In this case, the causative verb takes two arguments, an NP-OBJ and an S-COMP. The causee is represented as the NP-OBJ, and it is coreferential with the subject of the S-COMP argument, which is represented as a null pronoun. When the noun is followed by a postposition marker such as ‘앞에/PAD’ instead of ‘앞/PCA’, the causee argument is tagged as NP-COMP.

(15.2.1) Causee is the object or complement of the main clause

In this case, the causative verb takes two arguments, an NP-OBJ and an S-COMP. The causee is represented as the NP-OBJ, and it is coreferential with the subject of the S-COMP argument, which is represented as a null pronoun. When the noun is followed by a postposition marker such as ‘앞에/PAD’ instead of ‘앞/PCA’, the causee argument is tagged as NP-COMP.

(S (NP-SBJ 빛나는/NPC+으니/PCA)
 (VP (VP (ADVP 했거나/ADV)
 (NP-ADV 빛나는/NPC+으니/PCA)
 (VP (NP-COMP +T*-1)
 오/VV+으니/EAU))
 있/VX+으니/EPF+으니/EFN)))
)/SFN )

15 Causatives

Causatives are biclausal. The subject is the causer and the sentential complement denotes the situation the causer caused to bring about. There are two ways in which the causee can be represented syntactically: (i) as the subject of the complement clause, or (ii) as the object or the complement of the main clause.

15.1 Causee is the subject of the complement clause

In this case, the causative verb takes only an S-COMP argument, and the causee is represented as the subject of this S-COMP clause. The verbal ending of the S-COMP clause is usually ‘도록/ECS’ or ‘할/ECS’.

(15.1.1) Causative is the subject of the complement clause

In this case, the causative verb takes only an S-COMP argument, and the causee is represented as the subject of this S-COMP clause. The verbal ending of the S-COMP clause is usually ‘도록/ECS’ or ‘할/ECS’.

15.2 Causee is the object or complement of the main clause

In this case, the causative verb takes two arguments, an NP-OBJ and an S-COMP. The causee is represented as the NP-OBJ, and it is coreferential with the subject of the S-COMP argument, which is represented as a null pronoun. When the noun is followed by a postposition marker such as ‘앞에/PAD’ instead of ‘앞/PCA’, the causee argument is tagged as NP-COMP.

(15.2.1) Causee is the object or complement of the main clause

In this case, the causative verb takes two arguments, an NP-OBJ and an S-COMP. The causee is represented as the NP-OBJ, and it is coreferential with the subject of the S-COMP argument, which is represented as a null pronoun. When the noun is followed by a postposition marker such as ‘앞에/PAD’ instead of ‘앞/PCA’, the causee argument is tagged as NP-COMP.
장비, 경계 및 직권적용을 쉽게 향기 위해 연방 우방시설은 연대 우방 경계선
부근에 위치한다.

(S (S (NP-SBJ *pro*)
  (VP (NP-COMP (S (NP-SBJ *pro*)
    (VP (NP-OBJ (NP 장비/NNC)
      ,/SCM
      (NP 경계/NNC)
      (ADCP 및/ADC)
      (NP (NP 기원/NNC)
        (VP 작전/NNC+출/PCA)))
    (S-COMP (NP-SBJ *pro*)
      (VP 위치/NNC+의/XSV+되/EFN))
    )/VV+의/ECS))
  )/VV+의/ECS)
  (S (VP 연대/NNC 우방/NNC 시설/NNC+은/PAU)
    (VP 연대/NNC 우방/NNC 경계선/NNC 부근/NNC+의/PAD)
  )/VV+의/XSF+되/EFN)
./SFN)

관측장은 적의 무선 전화수신을 차례 등으로 전파한 적의 포반에 총신약도록 했습니다.

(S (NP-SBJ 관측/NNC+착/NSF+는/PAU)
  (VP (NP-COMP 적의/NPN
    무선/NNC
    전화수신/NNC+전력/PAU)
  )/VV+의/ECS)
  (VP (NP-OBJ (S (WHNP-2 *op*)
    (S (NP-SBJ *T*-2)
      (VP (NP-COMP의/DAN
        목적/NNC+을/XSF+되/PAU)
      )/VV+의/EAN))
    )/VV+의/EAN)
  )/VV+의/EAN)
  (NP 작전/NNC+을/PCA))
  (NP-COMP 적의/NPN
    포반/NNC+의/PAD)
  )/VV+의/XSF+되/PAU)
  )/VV+의/ECS))
./SFN)
16 Object-to-Subject Raising

16.1 Sentences with ‘만약탁’

만약탁 is an auxiliary predicate that occurs with a main verb inflected with ‘-ㄹ/을’.

아 책상은 악의들어 올 만약탁.

What is interesting about sentences with ‘-ㄹ/을 만약탁’ is that the subject of the sentence seems to have originated from the object/complement position of the main verb. For instance, in the above example, the sentential subject ‘아 책상은’ is also the object of the main verb ‘产销’.

Moreover, the subject of the main verb is not equivalent to the sentential subject. In the above example, the subject of the main verb ‘产销’ is not ‘아 책상은’, but is ‘악의들어’.

These syntactic properties of sentences with auxiliary predicate ‘만약탁’ is very similar to English tough-constructions.

John is tough for Mary to please.

In this example, John is the sentential subject, and yet it seems to have originated from the object position of please. Moreover, the subject of please is not John, but is Mary.

When annotating sentences with auxiliary predicate ‘만약탁’, assign the sentential subject and the subject of the main verb with -SBJ function. If the subject of the main verb is absent, insert an empty pronoun (*pro*). And then put a trace in the object/complement position of the main verb and coindex this trace with the sentential subject. Annotated examples are given below.

아 책상은 악의들어 올 만약탁.

(S (NP-SBJ-1 이/DAN ㈜/NNC* 는/PAU) 
  책상/NNC+ 들/PAU) 
(S (NP-SBJ 악의/NNC+ 들/XSF+ 이/PCA) 
  (VP (VP (NP-OBJ *T*-1) 
        채/VV+을/EAN) 
        만약/VX+달/EFN))
./SFN)

아 영화가 청소년의 볼 만약탁.

(S (NP-SBJ-1 이/DAN .GetHashCode/NNC+ 이/PCA) 
  영화/NNC+ 이/PCA) 
(S (NP-SBJ 청소년/NNC+ 이/PCA) 
  (VP (VP (NP-OBJ *T*-1) 
        보/VV+을/EAN) 
        만약/VX+달/EFN))
./SFN)

아 영화가 청소년에게 추천할 만약탁.
However, note that ‘만약다’ can also be used as a regular auxiliary predicate, where the sentential subject is also the subject of the main verb. Annotate such sentences just as any other sentences with auxiliary predicates: i.e., ‘만약다’ takes the highest VP as its complement.

16.2 **Sentences with ‘되다’**

One dominant usage of verb ‘되다’, when not used as a main verb, is an auxiliary verb as shown in the following example. In this example, the sentential subject and the subject of the main verb ‘가게’ are the same, namely ‘칠수가’.

然而，在某些其他情况下，句子的主语似乎起源于主句的宾语/补语位置。例如，在下面的例子中，主句
subject '이 기게는' is also the object of the main verb '쓰 게'. The subject of the main verb is an empty pronoun that refers to unspecified people.

The annotation method for such sentences is the same as sentences with auxiliary predicate '만약다'. That is, assign the sentential subject and the subject of the main verb with -SBJ function. If the subject of the main verb is absent, insert an empty pronoun (*pro*). And then put a trace in the object/complement position of the main verb and coindex this trace with the sentential subject. Annotated examples are given below.

이 기게가 몇 브게 되었다.

(S (NP-SBJ-1 이 기게 가)
 (S (NP-SBJ *pro*)
   (VP (VP (VP (NP-OBJ *T*-1)
     (VP (ADVP 몇/ADV)
       (VP 史 /VV+/EAU))))
      되/VX+있/EPF+더/EFN)))
 ./SFN)

유래 예비 양식은 셰었잡의 의해 없이는 쓰지 못하게 되어 잊숩니다.

(S (NP-SBJ-1 유 래/NNC
 예비/NNC
 양식/NNC+은/PAU)
 (S (NP-SBJ *pro*)
   (VP (VP (VP (ADVP (NP-COMP (NP 대채잡/NNC+의/PCA)
     (NP 이 가/NNC))
       없/ADV+는/PAU))
     (VP (NP-OBJ *T*-1)
       史 /VV+/EAU))
      몇 악/VX+ oddly/EAU)
     되/VX+ 떠/EFU)
   없/VX+飕 건 닥/EFN))
 ./SFN)

17 Coordination

The label of coordination has the same label as the coordinated phrases. For instance, in NP coordination, the coordinated NP phrases are attached to an NP. The coordinating adverb such as ‘그 리고’ or ‘또는’ is represented at the same level as the coordinated phrases. See §4.3 for examples of clausal coordination.

유리는 송신 기약 수신 기를 가끔 쓸절한다.

(S (NP-SBJ 유리는)
 (VP (NP-OBJ (NP 송신 기/NNC+의/PCJ)
   (NP 수신 기/NNC+을/PAU))
 (VP (ADVP 가끔/ADV)
(VP (VP R-106/NNC+VP+XSV+EFN)))
./SFN)

17.1 Level of coordination

Coordination is represented at the lowest level possible. For instance, where both VP coordination and S coordination analyses are possible, assign a VP coordination structure, unless the annotator has a strong intuition that S coordination is the right analysis.

우리는 R-106 우전기에 HAK-24형 승전지를 쓰고 R-116 우전기에 승리-80
건전지를 쓰니라.

(S (NP-SBJ 우리는)
  (VP (VP R-106/NF6
    우전 기/NNC+VP+PAD+은/PAU)
    (VP (NP-OB6 HAK-24/NF6 영/NNC 승전 지/NNC+VP+PCA)
      쓰 /VV+고/ECS)))
  (VP (NP-ADV R-116/NF6 우전 기/NNC+VP+PAD+은/PAU)
    (VP (NP-OB6 승리-80/NNC 건전 지/NNC+VP+PCA)
      쓰 /VV+여니라/EFN))))
./SFN)

17.2 Coordination of unlike categories

When two different categories such as ADJP and VP seem to be coordinated, we exceptionally allow coordination at a higher level to avoid coordination of different categories.

총참모장은 박도 그 밑에서 군의 최고 사령관으로 있고 전군을 지휘 통솔한다.

(S (S NP-SBJ 총참모장/NNC+은/PAU)
  (ADJP (NP-ADV 박도/DAN 극/DAN 영/NNC+예시/PAD)
    (NP-ADV (NP 군/NNC+의/PCA)
      (NP 최고/NNC 사령관/NNC+으로/PAU))
    (ADJP 은/VV+고/ECS)))))
(S (NP-SBJ *pro*)
  (VP (NP-OB6 전/DAN 극/NNC+의/PCA)
    (VV (VV 지휘/NNC)
      (VV 통솔/NNC+의/XSV+EFN)))))
./SFN)
Another example of coordination of unlike categories can be found when an NP is coordinated with a sentence. This is due to the unique characteristics of clauses in Korean which behave very often as if they are NPs. In our analysis, the coordinated S and NP are sisters and project to an NP.

In a VP level coordination, however, the first verb can be inflected with ‘-서’, ‘-면서’, ‘-약’ as well as ‘-고’ or ‘-히’. Verbs can form a coordinated structure if they share exactly the same argument structure.
18 Negative Sentences

There are two major types of sentential negation in Korean: preverbal negation and postverbal negation. Preverbal negation is bracketed as an adverb phrase (ADVP) which adjoins onto a VP.

Postverbal negation is annotated as an auxiliary verb which takes a VP as a complement.
(VP (ADVP 만약/ADV)
   (VP (VV 사용/NNC+역/XSV+지/EAU))))

/\SFN)

19 Minor Categories

19.1 Parenthetical

Parentheticals are usually surrounded by parentheses or commas. Bracket the entire parenthetical with the label PRN, including the punctuation marks that surround them. In most cases, they can be adjoined to VP or S, depending on the context. Annotate the content inside the parenthetical as much as you can, as you would for the content inside any other phrases.

장, (당연히 하는지 둘rip 놓으면서) 어거 마음대로 하세요.

(S (INTJ 작/IJ)
   ,/SCM
   (PRN -LRB-/SLQ
      (S (NP-SBJ *pro*)
       (VP (NP-OBJ (NP 당연히/NNC+역/PCJ)
          (NP 둘rip/NNC+작/PCA))
       (NP-COMP (NP 둘rip/NNC)
          (NP 이/NNC+예/PCA))
       동/VV+으면서/ECS))
      -RRB-/SRQ)
   (S (NP-SBJ *pro*)
    (VP (NP-OBJ 이/NNP)
     (VP (NP-ADV 마음/NNC+먹/PCA)
      (VP 먹우/VV+어요/EFN))))
   ./SFN)

만약 떨리서 떨리 무전망에 있는 무전소들, 애들 둘리 두 세 군데나, 동시에
모즐가면서 어민 모즐가서 무전하는 가?

(S (S (ADVP 만약/ADV)
   (NP-ADV 떨리/NNC+예서/PCA)
   (S (NP-SBJ *pro*)
    (VP (NP-OBJ (S (WHNP-1 *op*)
       (S (NP-SBJ *T*-1)
        (ADJP (NP-COMP 떨리/NNC
           무전망/NNC+예/PCA))
        없/VJ+는/EAN)))
     (NP 무전소/NNC+플/PCA))
    (VP (PRN ,/SCM
     (S (NP-SBJ *pro*)

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(VP (NP-OBJ 애프/NNC+을/PCA) 를/VV+어/ECS))
(NP 두/NNU
시/NNU
군대/NNX+의/PAU)
,(/SCN)
(NP-ADV 동시/NNC+에/PAU)
(VP (VV 희생/NNC+에/XXS+دة/ESN/PCA))
(S (NP-OBJ * proporcion+))
(VP (NP-OBJ 역전/DAN
모출/NNC
태호/NNC+을/PCA)
(VV 사용/NNC+에/XXS+는 난/EFN))
?(/SFN)

When a parenthetical occurs with a noun, represent it as the sister of the noun it is associated with.

마지막으로 정치보위부 에는 보위 지도원 (소좌) 1명이 있다.

(S (NP-ADV 마지막/NNC+으로/PAU)
(NP-COMP-1 정치/NNC
보위부/NNC+에/PAU+는/PAU))
(S (NP-SBJ 보위/NNC
지도원/NNC
(PRJ -LRB/-SLQ
소좌/NNC
-RRB/-SRQ)
1/NNU
있는/NNX+의/PAU)
(ADJP (NP-COMP *T*-1
있/VJ+어/EFN))
./SFN)

19.2 Lists

Letters and numerals which identify items in a list, and their surrounding punctuation, are labeled as LST. The list marker is represented as the sister of the phrase it precedes. In particular, when the enumerated items are listed in one sentence, they are conjoined.

경보병 해병의 임무는 다음과 같다: (1) 전선의 우방 지역에 정지하여 적의 적위 및 통신망을 막아서 전단; (2) 과부 섬시를 수습 하여모양으로써 적의 우방을 고려한다; (3) 그 우방지역에 제2 전단을 형성하여 적에게 전우방 양면전투를 감지한다.

(S (S (NP-SBJ (NP 경보병/NNC
해병/NNC+의/PAU)
(NP 임무/NNC+는/PAU)))
(ADJP (NP-COMP 닭/NNC+과/PAD) 닭/VJ+닭/EFN))

;/SY
(S (LST -LRB-/SLQ 1 -RRB-/SRQ)
 (S (S (NP-SBJ *pro*)
  (VP (NP-COMP (NP 전연/NNC+의/PCA)
     (NP 혼방/NNC 지역/NNC+에이/Pad))
     (VV 참투/NNC+의/EXSV+의/ECs)))
  (S (NP-SBJ *pro*)
   (VP (NP-OBJ (NP 적/NNC+의/PCA
                 지역/NNC)
             (ADCP 및/ADC)
             (NP 통신망/NNC+을/PCA)))
   (VV 마벽/NNC+이/EXSV+년 맥/EFN))))

;/SY
(S (LST -LRB-/SLQ 2 -RRB-/SRQ)
 (S (NP-ADV (S (NP-SBJ *pro*)
  (VP (NP-OBJ 근사/NNC
     사실/NNC+을/PCA)
     (VV 숭격/NNC
     맥/NNC+의/EXSV+으로도/EMN+으로도/Pad)))))
  (S (NP-SBJ *pro*)
   (VP (NP-OBJ (NP 적/NNC+의/PCA)
             (NP 혼방/NNC+을/PCA)))
   (VV 고란/NNC+의/EXSV+년 맥/EFN))))))

;/SY
(S (LST -LRB-/SLQ 3 -RRB-/SRQ)
 (S (S (NP-SBJ *pro*)
  (VP (NP-ADV 근/DAN
     혼방/NNC
     지역/NNC+에이/Pad))
  (VP (NP-OBJ 적/XP+2/NNU
     전성/NNC+을/PCA)
     (VV 성성/NNC+의/EXSV+의/ECs)))))
  (S (NP-SBJ *pro*)
   (VP (NP-ADV 적/NNC+에게/Pad)
     (VP (NP-OBJ 전 혼방/NNC
       양인/NNC
       전투/NNC+을/PCA)
       (VV 강요/NNC+의/EXSV+년 맥/EFN))))))
./SFN)
20 Empty Categories

20.1 Empty argument

Dropped arguments are represented as *pro* and labeled as NP with the appropriate function tag.

우선 맛을 맞 게나 운용하는가?

(S (NP-SBJ *pro*)
 (VP (NP-OBJ 우선 맛/NCC+을/PCA)
  (VP (NP-ADV 및/NNU 개/NNX+는/PAU)
   (VP (VV 운용/NNC+을/XSV+는 *가*/EFN))))
 ?/SFN)

여제방 12시에 밥을 음니다.

(S (NP-SBJ *pro*)
 (VP (NP-ADV 여제방/NNC)
  (NP-ADV 12/NNU *-를/NNX+是/PAD)
  (VP (NP-OBJ *pro*)
   벌/VV+을/EPF+을/EFN))
 ./SFN)

20.2 Trace

When an argument constituent is fronted before the subject, it leaves a trace *T* which is labeled as NP (or S in some cases) with an appropriate function tag and this trace is coindexed with the fronted element.

수신 기를 빼는 가끔 손질한다.

(S (NP-OBJ-1 수신 기/NNC+을/PAU)
 (S (NP-SBJ 위/PN+는/PAU)
  (VP (NP-OBJ *T*-1)
   (VP (ADVP *가*/ADV)
    (VP (VV 손질/NNC+을/XSV+는/EFN))))))
 ./SFN)

Argument relative clauses also contain a trace *T* (see §20.3).

20.3 Empty operator

Relative clauses are indicated with an empty operator *op* which is labeled as WHNP. When an argument has been relativized, the empty operator is coindexed with the gap in the clause which is semantically associated with the head noun. The gap in the relative clause is represented as *T* and is labeled as NP with the appropriate function tag.
When an adjunct has been relativized, there is no coindexation between the empty operator and the adjunct gap in the relative clause.

그 무전기 가 고장난 원인이 무엇인가?

20.4 Predicate deletion

Predicate deletion occurs in coordinated constructions. The deleted predicate is represented as *??* and is labeled with an appropriate head level or phrase level tag, e.g., VV, VJ, and VP.

20.4.1 Verb deletion

The deleted verb is annotated as (VV *??*).

그 기는 기차가 42센티, 높이가 7센티, 세토가 42센티쯤 됩니다.

(S NP-SBJ 크 기/NNC+는/PAU)
(S NP-SBJ 크 기/NNC+는/PAU)
(VP (NP-COMP 42/NNU 센/*EFC*/NNX)
(VV *??*))

./SCM
(S NP-SBJ 크 기/NNC+는/PAU)
(VP (NP-COMP 7/NNU 센/*EFC*/NNX)
(VV *??*))

./SCM
(S NP-SBJ 세토 /NNC+는/PAU)
(VP (NP-COMP 42/NNU 센/*EFC*/NNX+품/XSF)
("VV+는서네단/EFN))
./SFN)
20.4.2 VP deletion
The deleted VP is annotated as (VP *?*).

( (S (S (NP-SBJ 뒷받침/NNC 지휘망/NNC+은/PAU)
    (VP (NP-ADV 기본/NNC 주목수/NNC
        46.54/NNU 예약/EPAU/NNX+예서/PAD)
    )
    ./SCM)
    (S (NP-SBJ 사격/NNC 지휘망/NNC+은/PAU)
    (VP (NP-ADV 기본/NNC 주목수/NNC
        47.36/NNU 예약/EPAU/NNX+예서/PAD)
    )
    ./VX+슘/EFN))
  )
./SFN)

20.4.3 VX deletion
When a sentence contains clauses that are coordinated and only the second clause has an auxiliary verb that takes scope over the entire coordinated clauses, annotate the sentence as S coordination and treat the first clause as having a VX deletion.

( (S (S (NP-SBJ 차수/NPR+는/PAU)
    (VP (VP (NP-OBJ 밥/NNC+을/PCA)
          먹/VV+고/ECS)
          (VX *?*))
    )
    (S (NP-SBJ 수위/NPR+는/PAU)
    (VP (VP (NP-OBJ 물/NNC+을/PCA)
          마시/VV+고/ECS)
          (VX+toDouble/EPF+담/EFN))
    )
  )
./SFN)

20.4.4 Copula deletion
In coordinate copular sentences, the copula can be deleted. In such cases, put vacuous VP around the predicative noun to mark predication.

( (S (S (NP-SBJ 몸/NNC 중대/NNC+는/PAU)
    (VP "*/SLQ
    (NP 감산/NPR 21/NNU)
  )
  )
./SFN)
Punctuation markers are not given a phrase level tag, and they attach to the highest level possible.

21.1 Mid-sentence punctuation

21.1.1 Quotation

Quotation markers are siblings of the constituent they surround. For instance, if an NP is surrounded by a quotation marker and it is a daughter of a VP, then the quotation markers are also daughters of the same VP.

```
\`\\`\\`
```

Sometimes the content of the quotation markers form a constituent only by virtue of their presence. In this case, place a phrase level tag outside of the quotation markers, as in the following example:

```
\`\\`\\`
```

```
\`\\`\\`
```

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21.1.2 Comma

Commas are siblings of the constituent they follow. For example, if a comma follows an adverb adjoined to an S, it attaches to the same S.

그림, 계속 해 보자.

(S (ADCP 그림/ADC)
 ,/SCM
 (S (NP-SBJ *pro*)
  (VP (VP (VV 계속/NNC+의/XSV+의/EAU))
   볼/VX+지/EFN))
 ,/SFN)

If a comma follows a noun that is adjoined to an NP, it attaches to the same NP.

충선 기, 수선 기, 안택나, 그런 정도지요.

(S (NP-SBJ *pro*)
 (VP (NP (NP 충선 기/NNC)
    ,/SCM
     (NP 수선 기/NNC)
    ,/SCM
     (NP 안택나/NNC)
    ,/SCM
     (NP 그린/DAN
      정도/NNC+의/CO+지요/EFN)))
 ,/SFN)

21.2 Sentence-final punctuation

A sentence-final punctuation is a child of the highest level S label of the sentence.

축전지 재고도 충분히 있는가?

(S (NP-SBJ 축전지/NNC 재고/NNC+의/PAU)
 (ADJP (ADVP 충분히/ADV))
22 Ambiguity

22.1 Adverb adjunction to S or VP

If a sentence has an empty subject and an adverb preceding the VP, in principle, the adverb can adjoin to S, or to VP. In this case, the default rule is to adjoin the adverb to the VP, rather than to the S.

그때 난가 안 일을 순서대로 설명하라.

(S (NP-SBJ *pro*)
 (VP (NP-ADV 그때/NNC)
  (VP (NP-OBJ (S (WHNP-1 *op*)
   (S (NP-SBJ 넌/NPN+ /PCA)
    (VP (NP-OBJ *T*-1)
     야/VV+ /EAN)))
   (NP 일/NNC+을/PCA))
 (VP (NP-ADV 순 /NNC+태도/PAD)
  (VP (VV 설명/NNC+야/XSV+달/EFN))))))
.

However, when the annotator has a strong intuition that the adverb takes the S as its scope, adjoin it to S.

우선 부터 규정약어탄 뼈목에선 무엇을 가르치는가?

(S (ADVP 우선/ADV)
 (S (NP-SBJ *pro*)
  (VP (NP-ADV (S (WHNP-1 *op*)
   (S (NP-SBJ *T*-1)
    (VP (NP 부터/NNC
     규정약/NNC+여/CO+말는/EAN))))
   (NP 과목/NNC+에서/PAD+을/PAU))
  (VP (NP-OBJ 무엇/NPN+을/PCA)
   가르치/VV+는 가/EFN))))
.

?/SFN

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When a sentence has an empty subject with an adverb tagged as ADC, the adverb is adjoined to the S instead of the VP.

그렇므로, 기기 학생의 전부 몇 명이 나 있었는지 그것 조차 모르겠습니다.

(S (ADCP 그렇므로/ADC)
 (S (NP-SBJ *pro*)
  (VP (NP-OBJ (S (NP-COMP-1 기기/NPN+록/PAU)
   (S (NP-SBJ 학생/NNC+의/PCA)
   (ADJP (ADVP 전부/ADV)
    (NP-ADV 몇/NNU 명/NNX+이/나/PAU)
    (ADJP (NP-COMP *T*-1)
      (NP 너무/NPN+조차/PAU))
    모름/VV+ 것/EPF+없/지/EFN))
  모름/VV+ 것/EPF+없/지/EFN))
./SFN)

22.2 Object scrambling or not

In a sentence with an empty subject, an object NP that appears in the beginning of a sentence with a topic marker ‘-는’ is by default treated as in-situ, i.e., not treated as a moved element.

고록 토대로 보조치 선태어론은 어떤 목표에 사격할 때 사용하는가?

(S (NP-SBJ *pro*)
 (VP (NP-OBJ 고록/NNC
   토대로/NNC
   보조치/NNC+의/XSF
   선태/NNC+은/PAU)
  (VP (NP-ADV (S (WHNP *op*)
    (S (NP-SBJ *pro*)
     (VP (NP-COMP 어린/DAN
      목표/NNC+의/PAU)
     (VV 사격/NNC+의/XSV+은/EA)
    ))
  (NP 목표/NNC))
  (VP (VV 사격/NNC+의/XSV+은/EFN))
) ./SFN)

However, this is not a hard-cast rule. When the annotator has a clear intuition that the object NP should be treated as a moved element, annotate accordingly.

급조 적취원은 기록 메시 보고할 필요가 없지 않.

(S (NP-OBJ-1 급조/NNC
  적취원/NNC+은/PAU)
 (S (NP-SBJ (S (NP-SBJ *pro*)
  (VP (VP (NP-OBJ *T*-1)
   (VV (VV 기록/NNC+의/XSV+의/EFN/ECS
  )/SFN)

58
22.3 Overt subject or pro

When an overt NP subject is followed by two VP's, and it is possible to assign a pro NP for either VP, we parse incrementally from left to right, assigning a pro NP subject for the second VP.

However, this is just a guideline to be followed when the annotator is in doubt. There are many cases where this incremental parsing principle does not apply, including when the first VP is part of a complex NP, a relative clause, or an adverbial clause.

59
(VP (VV 쓰/NNC+먹/XSV+어/EAN)))
(NP 작/NNC+을/PCA))
(VV 쓰/NNC+먹/XSV+어/EAN)))
(NP 쓰/NNC+는/PAU))
(VP (NP-OBJ 영/PCA)
먹/NNC+을/PCA)
(VV 쓰/NNC+먹/XSV+어/EAN)))

22.4 Complement or not

For certain predicates such as ‘있다’ that can be analyzed as either having a complement or not, go for an analysis with no complement, unless otherwise suggested by context.

For example, in the following sentence, the clause headed by ‘수’ can in principle be treated either as a complement of the verb ‘있다’ with an empty subject, or simply as a sentential subject. In such cases, go for the simpler analysis of analyzing it as a sentential subject.

우리가 가지고 있는 지도가 부정확해서 그 지점을 찾을 수 없었다.

(S (S (NP-SBJ (S (WHNP-1 *op*))
    (S (NP-SBJ 수/NNP+이/NPP+는/PCA)
      (VP (VP (NP-OBJ *T*=-1)
        먹/VV+어/EAU)
      읽/VV+는/EAN))))
     (NP 작/NNC+먹/XSV+어/EAN))
    (VP (NP-OBJ +/DAN 읽/NNC+을/PCA)
      찾/VV+어/EAN))
   (ADJP 부정확/NNC+먹/XSV+역시/ECS))
(S (NP-SBJ (S (NP-SBJ *pro*)
    (VP (NP-OBJ +/DAN 읽/NNC+을/PCA)
      찾/VV+어/EAN))
   (NP 수/NNX))
  (ADJP 읽/VV+있/EFN))
)/SFN

22.5 Trace of the scrambled object before or after an adverb

When an object or a complement is scrambled out of a VP which is modified by an adverb, the trace can in principle be put before or after the adverb. In such cases, put the trace immediately preceding the verb, unless otherwise indicated by context.

1개 밥먹고 연대가 있다면 걸 직는 문의가 없습니다.

(S (NP-OBJ-1 (S (NP-SBJ 1/NNU
    개/NNX
백먹고/NNC
연대/NNC+먹/XSV+어/EAN))
   (ADJP 없/VV+있/EFN))
  (NP 없/NNX+어/EAN))
(S (NP-SBJ +/DAN 읽/NNX+고/PCA))
)/SFN
There is an exception to this guideline. Some adverbs normally come immediately before the verb. In such cases, the trace of the scrambled object is placed before the adverb.

그 사람은 네가 잘 알지.

(S (NP-OBJ-1 謝/DAN
     (NPP/NNC+은/PAD)
(S (NP-SBJ 謝/NPP+他/PCA)
   (VP (NP-OBJ 謝/PCA)
       (VP (ADVP 謝/EFN)
           (VP (NP-COMP-LV 謝/*NNC+는/PAD)
                (LV 謝/EFN/EXJ+他/EFN)))))

23 Confusing Examples

This section lists a number of specific examples with the corresponding annotation as a reference guide.

23.1 ‘필요로 걷다’

In this case, ‘ 걷다’ is treated as a light verb, and ‘필요로’ is treated as the base noun of the light verb. Together, they form a predicate.

철수가 사람을 더 필요로 한다.

(S (NP-SBJ 謝/NPP+他/PCA)
   (VP (NP-OBJ 謝/PCA)
       (VP (ADVP 謝/ADVP
           (VP (NP-COMP-LV 謝/*NNC+는/PAD)
                (LV 謝/EFN/EXJ+他/EFN)))))

23.2 ‘-뿐만 아닌다’

‘-뿐만’ is treated as the subject of ‘ 아닌다’. That is, ‘ 아닌다’ is intransitive adjective in this case.

책고로 종태는 적을 소멸할뿐만 아닌다 전투적역을 소멸하기도 하지요.

(S (NP-SBJ 謝/NPP+他/PCA)
   (VP (VP (S (NP-SBJ 謝/NPP+他/PCA)
               (VP (NP-OBJ 謝/*NNC+는/PAD)
                    (VP 謝/EFN/EXJ+他/EFN)))))
The NP with the postposition ‘-밖에 안 되다’, ‘-밖에 몰른다’

The NP with the postposition ‘-밖에’ is treated as an adverbial element tagged with -ADV, and the presence of an empty NP complement is assumed.

In general, this verb is analyzed as a double nominative verb that takes a subject and a complement NP as in ‘كات Nghị bổn cạnh’.' However, in some cases it is treated as an intransitive verb, having only a subject as in ‘ba培养 갑니다.’

23.5 *pro* NP subjects with no referent

In many sentences, it is not clear what the *pro* NP subjects are supposed to refer to. This situation occurs particularly often in constructions involving copulas. These *pro* NPs should nevertheless be represented in an appropriate position.
(VV 개/NNC+의/XP+ 음/EFN))
(NP 예정/NNC+의/CO+의/EFN))
./SFN)

통신속 논 인적 승격할 계획이었던 가?

(S (NP-SBJ *pro*)
 (VP (NP (S (NP-SBJ *pro*)
 (VP (NP-OBJ 통신속/NNC+의/PAU)
 (VP (NP-ADV 인/NNP)
 (VP (NP 승격/NNC+의/XP+ 음/EFN))
 (NP 계획/NNC+의/CO+의/EFN))
 ./SFN)

23.6 ‘N-에서 N’

In general, ‘N-에서’ should project to an NP and attach to a VP. But there are cases in which it should be grouped together with another NP and attach to an NP.

6시에서 6시 30분 사이에, 즉 대대가 공격 준비 사격을 하는 동안이 지요.

(S (NP-ADV (NP 6/NNU 시간/NNX+에서/PAU)
 (NP 6/NNU 시간/NNX 30/NNU 분/NNX))
 (NP 사격/NNC+의/PAU))
 ./SFN)

(ADCP 족/ADC)
(S (NP-SBJ *pro*)
 (VP (NP (S (NP-SBJ 대대/NNC+의/PAU)
 (VP (NP-OBJ 공격/NNC 준비/NNX 사격/NNC+의/PAU)
 (VP (NP 동안/NNX의/CO+의/PAU) 음/EFN))
 (NP 동안/NNX의/CO+의/PAU) 음/EFN))
 ./SFN)

23.7 ‘N-PAD+PCA’

Function tags for nouns that have an adverbial postposition in conjunction with a case postposition are determined by their grammatical functions within the sentence. For instance, in the example below, ‘역/기에서부터 가’ has both adverbial postposition and a nominative case postposition, and it has the function tag -SBJ since it functions as the subject of the whole sentence.

역/기에서부터 가 문제이다.

(S (NP-SBJ 역/기/NNP+에서/PAU부터/PAU+의/EFN+의/PAU)
 (VP (NP 문제/NNC+의/CO+의/EFN))
 ./SFN)
23.8 ‘N-PAD N-PAD’

A noun with an adverbial postposition can occur with another noun with an adverbial postposition to project an NP. In such cases, adverbial postpositions on the two nouns have cooccurrence restrictions and the second noun usually has a case postposition in addition to an adverbial postposition. For instance, a noun with the adverbial postposition ‘-에서 부터’ (from) can cooccur with another noun with an adverbial postposition and a nominative case postposition ‘-까지’ (to-Nom). In such examples, the first noun is bracketed as NP and adjoins onto the second noun bracketed as NP. The two NPs do not have a function tag, and only the NP to which the two NPs attach has an appropriate function tag.

학교에서부터 집까지가 문제이 다.

(S (NP-SBJ 학교/NNC+에서 부터/PAD)
  (NP 집/NNC+까지/PAD+가지/PCA))
 (VP (NP 문제/NNC+이/OD+되/EFN))
./SFN)

Some examples of adverbial postpositions that are subject to such cooccurrence restrictions include:

NP-에서 NP-도
NP-에서 NP-까지
NP-부터 NP-까지
NP-부터 NP-도
NP-에서 NP-에도의
NP-에서 NP-에도의

Note that these pairs of nouns are grouped together as an NP only if such analysis is necessary: i.e., when the two nouns form a phrase to function as a subject or an object of a predicate, or the two nouns form a phrase and become a modifier of another NP. Otherwise, the two nouns each project an NP and they both adjoin to a VP.

철수가학교에서부터 집까지 떠었다.

(S (NP-SBJ 철주/NPR+가/PCA)
 (VP (NP-ADV 학교/NNC+에서 부터/PAD)
  (NP-ADV 집/NNC+까지/PAD))
 (VP 떠/VV+되/EFN+가지/EFN))
./SFN)

23.9 Fragments

NP fragments do not have function tags.

"아마" 니?

(S (NP "아마"/ADV+니/PAD)}
23.10 Coordination of a noun and a Sino-Korean verb with ‘악’
Treat examples such as ‘자위 통솔한다’ or ‘측각 틀따한다’ as VV-level coordination.

전근을 자위 통솔한다.

(S (NP-ADJP 후/NNC+에/PAD)
   (VP (NP-OBJ 전/DAN
        근/NNC+을/PCA)
        (VV (VV 자위/NNC)
            (VV 통솔/NNC+악/XSV+ㄴ다/EFN)))
   ./SFN)

23.11 ‘-고 액서’
In this rather colloquial construction, ‘악’ is annotated as an auxiliary verb.

대재름 액서는 기술도 시간도 없고 액서 대규모의 축산작업은 할 수가 없지요.

(S (NP-ADV 대재름/NNC+급/NNX+에/PAD+는/PAD+)
   (S (NP-SBJ (NP 기술/NNC+도/PAU)
         (NP 시간/NNC+도/PAU))
         (VP (ADJP 없/VJ+고/ECS)
              액/VX+여서/ECS))
   (S (NP-SBJ (S (NP-SBJ *pro*)
         (VP (NP-OBJ-LV (NP 대규모/NNC+의/PCA)
            (NP 축산/NNC 작업/NNC+은/PAU))
            (LV 액/VV+ㄹ/EAN)))
            (NP 수/NNX+가/PCA))
            (ADJP 없/VJ+지요/EFN)))
   ./SFN)

23.12 ‘-것만 액다’
Treat the complex NP in ‘-것만 액다’ as the object of ‘악다’.

너는 목숨이 살았다 는 것은 애도 다행이다.

(S (S (NP-SBJ ‘/NP+는/PAD+)
   (VP (NP-OBJ (S (NP-SBJ *pro*)
        (VP (NP-COMP 목숨/NNC+의/PCA)
23.13 ‘물론’

‘물론’ is tagged as an adverb (ADV) in most cases. But when it occurs with a copula, it is tagged as a common noun (NNC) and is bracketed accordingly.

예, 불구하고 물론이고 사회 안전원도 제외됩니다.

(S (INTJ 예/IJ)
 ,/SCM
 (S (S (NP-SBJ 불구하고 NNC+는/PAU)
 (VP (NP 물론/NNC+이/CO+는/ECS)))
 (S (NP-SBJ 사회/NNC
 안전원/NNC+도/PAU)
 (VP (VV 제외/NNC+의/XSV+는나타/EFN)))))
 ./SFN)

23.14 ‘작어 스스로’

In ‘작어 스스로’, ‘ 스스로’ is an adverb taking ‘작어’ as a complement NP.

경상작이는 작어 스스로 치로하는 경우가 많지요.

(S (NP-SBJ (S (NP-SBJ 경상작/NNC+는/PAU)
 (VP (ADVP (NP-COMP 작/1)/NPN)
 스스로/ADV)
 (VP (NP-OBJ *pro*)
 (VV 치로/NNC+의/XSV+는/EAN))))
 (NP 경우/NNC+가/PCA))
 (ADJP 맛/VJ+치요/EFN)
 ./SFN)

23.15 ‘얼마나 되어’

‘되여’ in ‘얼마나 되어’ is a verb requiring a degree argument. It is the same kind of verb as in ‘우전히의 주락수 범위는 3km+가 원더다.’ In ‘얼마나 되여’, there is no NP for degree argument, and instead the adverb ‘얼마나’ seems to assume this role. In such sentences, simply adjoin ‘얼마나’ to the verb, just like any other adverbs.

R-106 무전히의 주락수 범위는 얼마나 되어가?
(S (NP-SBJ (NP R-106/NFW
무진 가/NNC+의/PCA)
  (NP 주막수/NNC
   편위/NNC+는/PAU))
  (VP (ADVP 열량낙/ADV)
   (VP 되/VV+는 가/EFN))
  ?/SFN)

대체 방어 지역의 총성은 보통 열량낙 되는 가?

(S (NP-SBJ (NP 대체/NNC 방어/NNC 지역/NNC+의/PCA)
  (NP 총성/NNC+은/PAU))
  (VP (ADVP 보통/ADV)
   (ADVP 열량낙/ADV)
   (VP 되/VV+는 가/EFN))
  ?/SFN)
# A Summary of the Penn Korean Treebank Part-of-Speech Tagset

## A.1 Content Tags

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<th>Category</th>
<th>Tag Description</th>
<th>Tag Label</th>
<th>Examples</th>
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<tr>
<td>noun</td>
<td>proper noun</td>
<td>NPR</td>
<td>한국 (Korea), 퀴 공 (Clinton)</td>
</tr>
<tr>
<td></td>
<td>common noun</td>
<td>NNC</td>
<td>학 교 (school), 컴퓨터 (computer)</td>
</tr>
<tr>
<td></td>
<td>dependent noun</td>
<td>NNX</td>
<td>것 (thing), 등 (etc), 년 (year), 달러 (dollar), 적 (situation)</td>
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<tr>
<td></td>
<td>pronoun, demonstrative</td>
<td>NPN</td>
<td>그 (he), 이 것 (this), 무엇 (what)</td>
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<tr>
<td></td>
<td>ordinal, cardinal, numerical</td>
<td>NNU</td>
<td>하나 (one), 첫 번째 (first), 1, 세 (three)</td>
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<td></td>
<td>words written in foreign</td>
<td>NFW</td>
<td>Clinton, computer</td>
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<tr>
<td></td>
<td>characters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>predicate</td>
<td>verb</td>
<td>VV</td>
<td>가 (go), 식 (eat)</td>
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<td></td>
<td>adjective</td>
<td>VJ</td>
<td>예쁘 (pretty), 달리 (different)</td>
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<tr>
<td></td>
<td>auxiliary predicate</td>
<td>VX</td>
<td>있 (present progressive), 애 (must)</td>
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<tr>
<td>adverb</td>
<td>constituent adverb, clausal</td>
<td>ADV</td>
<td>매우 (very), 조금 되 (quietly),</td>
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<td></td>
<td>adverb</td>
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<td>절발 (please), 만일 (if)</td>
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<td></td>
<td>conjunctive adverb</td>
<td>ADC</td>
<td>그 립 (and), 그 립 날 (but, however),</td>
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<td></td>
<td></td>
<td>맞 (and), 혹은 (or)</td>
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<td>configurative, demonstrative</td>
<td>DAN</td>
<td>새 (new), 한 (old), 그 (that)</td>
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<td>exclamation</td>
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<td>야 (ah)</td>
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<td>list marker</td>
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<td>a, (b), 1, 2.3.1, 가, 나.</td>
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### A.2 Function Tags

<table>
<thead>
<tr>
<th>Category</th>
<th>Tag Description</th>
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<tr>
<td>postposition</td>
<td>case</td>
<td>PCA</td>
<td>/#A1/#B4 (nominative), /#2F (accusative), /#AC/#C8 (possessive), /#28nominative/#29, /#AC/#DB/#E5 (accusative), /#28possessive/#29, /#AC/#B6 (vocative)</td>
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<td>adverbial</td>
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<td>PAD</td>
<td>에서 (from), 향 (to)</td>
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<td>PCJ</td>
<td>와/와, 아/가 (and)</td>
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<td>PAU</td>
<td>만 (only), 도 (also), 은 (topic), 막 (even)</td>
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<td>final</td>
<td>EFN</td>
<td>는/는/는 (declarative), 너, 는/는/는 (interrogative), 예/예/예 (imperative), 자기 (possessive), 구/구 (exclamatory)</td>
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<td></td>
<td>coordinate, sub-</td>
<td>ECS</td>
<td>고 (and), 둘/둘 (because), /El (attaches to adjectives to derive adverbs), // (that), 라고 (that)</td>
</tr>
<tr>
<td></td>
<td>ordinate,</td>
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<tr>
<td></td>
<td>adverbial,</td>
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<td>complementizer</td>
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<td>EAU</td>
<td>야, 쥰, 싸, 고 (on verbs or adjectives that immediately precede auxiliary predicates)</td>
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<td>EPT</td>
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<td>suffix</td>
<td>XSF</td>
<td>낫, 병, 적</td>
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<td></td>
<td>prefix</td>
<td>XPF</td>
<td>제가, 가, 하</td>
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<td>verbalization suffix</td>
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<td>XSV</td>
<td>마다, 뭐, 싸의</td>
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<td>adjectivization suffix</td>
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<td>XSJ</td>
<td>스럽, 달, 하</td>
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</table>

### A.3 Symbols

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<td>others</td>
<td>SSY</td>
<td>.. ; : -</td>
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