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Bracketing Guidelines for Penn Korean TreeBank

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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 subcategorization 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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A Summary of the Penn Korean Treebank Part-of-Speech Tagset

A.1 Content Tags
A.2 Function Tags
A.3 Symbols
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.
Complement NP: marked with an adverbial 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) \[ \begin{array}{c} \text{XP} \\ \text{YP} \end{array} \] \[ \begin{array}{c} \text{X} \end{array} \]

- 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: ‘-씩 줄이’, ‘-씩 하기’, ‘-는 물든’, ‘-로 먹여주고’, ‘-없는’. 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 an 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.

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

- 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 ‘-導’ or ‘-てる等’. 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 ‘-導’ or ‘-てる等’ 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.

우진 가 왔고 집 notícia.

(S (NP-SBJ 우진 가/NNC+ 가/PCA)
 (VP 고 장났다/VV+ 왔/EPF+ 다/EFN)
 . /SFN))

우진 가 왔고 집 новости가?

(S (NP-SBJ 우진 가/NNC+ 가/PCA)
 (VP 고 장났다/VV+ 왔/EPF+ 슴 TabIndex/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 무진가가 고장났다고 말했다.

(S NP-SBJ 그/NPN+는/PAU)
  (VP (S-COMP (NP-SBJ 무진가/NNC+가/PCA))
   (VP 고장났/VV+었/EPF+따고/PCS))
   말작/VV+었/EPF+따/EFN)
./SFN)

그건 열마나 많아 쇠는 가에 달려 있지요.

(S NP-SBJ 그/NPN+는/PAU)
  (VP (VP (S-COMP (NP-SBJ *pro*)
       (VP (NP-OBJ *pro*)
        (VP (ADVP (ADVP 열마나/ADV)
             (ADVP 많아/ADV)))
        (VP 이/VV+는 /EFN+에/PAU))))
   달려/VV+었/EAU)
./SFN)

4.2.2 Sentential adjuncts

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

날씨 약간 더우면 찬란 엽전이 왕래된답.

(S (S NP-SBJ 날/NNC+이/PCA)
  (ADJP (ADVP 약간/ADV)
    (ADJP 덜/VJ+면/PCS)))
  (S (NP-SBJ 찬란/NNC
       엽전/NNC+이/PCA)
   (VP (VV 왕래,NNC+이/_XSV+답/EFN))))
./SFN)

우리는 그 통신 기체에 대해 이야기했다.

(S NP-SBJ 우리/NPN+논/PAU)
  (VP (S (NP-SBJ *pro*)
       (VP (NP-COMP 그/DAN
            통신/NNC

6
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.

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 adverbal 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/-으로' or '이-가', 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.
Sentential elements taking suffixes such as ‘-치’ 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-/DEDged NP.

어떤 종류의 기준선이 사용되는지에 따르 방위에는 세 가지 종류가 있습니다.

(S (S-OBJ-1 (NP-SBJ (NP 근/NPN+등/XSF+의/PCA)
                      (NP 근사/NNC 창모/NNC+갑/PCA))
                      (VP (NP 근사/NPN+ 입/NPF+이/EEAN+논/PAU))))

어떤 종류의 기준선이 사용되는지에 따르 방위에는 세 가지 종류가 있습니다.

(S (NP-SBJ *pro*)
   (VP (S-COMP (NP-SBJ (NP 어떤/DAN 종류/NNC+의/PCA)
                      (NP 기준선/NNC+의/PCA))
                      (VP (VV 사용/NNC+의/XSV+ 논/EEAN+ 논/PAU))))

(S (NP-ADV 방위/NNC+의/PAD+논/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 ‘자막, 전자하’, etc.

제가 일이 말씀드린 밥의 같은 1 소래장은 오늘 아침에 전사했지요.

(S (ADVP (NP-COMP (S (NP-SBJ 朴/NNU
           가치/NNX
           축무/NNC+의/PCA)
           (ADJP perPage/VP+의/EAN)))))
          ./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 직업병의 곤두 오령을 달두는 가?

(S (NP-SBJ *pro*)
   (VP (NP-ADV 역전/DAN
       과목/NNC+에서/PAD)
       (VP (NP-OBJ (NP 직업병/NNC+의/PCA)
           (NP 곤두/NNC
           오령/NNC+을/PCA)
           달두/VP+는 가/EFN)))
   ./SFN)

Some verbs such as ‘말하려’ 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 ‘대하다, 죽하다, 가다’ and so on.

이 사람도 조적에 속합니다.

(S (NP-SBJ 이/DAN 사람/NNC+도/PAU)
 (VP (NP-COMP 조적/NNC+에/PAD)
  속하다/VV+బ니다/EFN)
 ./SFN)

고등학교 3학년 학생은 환변소에 갑니다.

(S (NP-SBJ (NP 고등/NNC
  학교/NNC)
  (NP 3/NNU
   학년/NNX)
  (NP 학생/NNC+은/PAU))
 (VP (NP-COMP 환변소/NNC+에/PAD)
   곳/VV+ㅂ니다/EFN)
 ./SFN)

의수 규정, 보초와 감시병과 직할병의 근무 요령, 근태 예절, 근사 규율, 그리고 상벌 사항 등에 대해 가르쳐집니다.

(S (NP-SBJ *pro*)
 (VP (S (NP-SBJ *pro*)
  (VP (NP-COMP (NP (NP 의수/NNC 규정/NNC)
   ,/SCM
   (NP (NP 보초/NNC+무/PCJ)
    (NP 감시병/NNC+무/PCJ)
    (NP 직할병/NNC+의/PCJ))
   (NP 근무/NNC 요령/NNC))
   ,/SCM
   (NP 근태/NNC 예절/NNC)
   ,/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.

Ditransitiv ev erbs suc ha s/`

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.
109 언제든 여暇공 오성산 연대하고도 합니다.

(S (NP-SBJ *pro*)
 (VP (NP-OBJ 109/NNU
     연대/NNC+물/PCA)
     (VP (ADVP 여暇공/ADV)
         (VP (NP-COMP 오성산/NPR
             연대/NNC+목고/PAD+토/PAU)
             악/VV+더니 다/EFN)))
)./SFN)

5.5 Double Nominative Verb

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

저의 퇴탁은 조 사저 경연에서 승작가 됐습니다.

(S (NP-SBJ 저의/NPN
     퇴탁/NNC+목/PCA)
     (VP (ADVP 조/ADV)
         (NP-ADV 조/NNC
             경연/NNC+예서/PAD)
         (VP (NP-COMP 조/NNC+목/PCA)
             퇴/VV+었/EPF+더니 다/EFN)))
)./SFN)

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.

그 소택 사저속은 옷서 사저가 죽었다.

(S (NP-SBJ 그/NAN
     소택/NNC
     사저속/NNC+는/PAU)
     (S (ADVP 옷서/ADV)
         (S (NP-SBJ 사저/NNC+목/PCA)
             (VP 죽/VV+었/EPF+더니 다/EFN)))
)./SFN)

5.6 Predicative Nominal: Copula

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

그리고 팀중 소택의 포존 공격 점은 약 150 미터입니다.
(S (ADCP 그 리 고/ADC)
    (S (NP-SBJ (NP 행크/NNC 소태/NNC+의/PCA)
        (VP (NP 악/DAN 150/NNU 이력/NNX+의/CD+/여니/다/EFN))))
/SFN)

5.7 Adjective

Intransitive adjectival predicates do not take any internal arguments.

(ADJP 그림/ADVP 놀다/NPP+는/PAU)
    (S (NP-SBJ (NP 놀다/NNC+의/PCA))
        (VJ/ADVP +/EFN))
/SFN)

5.8 Adjective with a complement NP

Some adjectival predicates such as ‘달이 달, 껍질’ take an NP complement.

(ADJP 닭/ADVP 닭+하/NFX+의/PCA)
    (VJ/ADVP +/EFN))
/SFN)

5.9 Double Nominative Adjective

Some adjectives such as ‘있나, 아니까, 좋나, 설까, 필요무니까’, etc. take an NP with a nominative case marker as a complement. In such cases the NP complement is tagged with -COMP.

(ADJP (ADVP 앨+과/NFX+의/PCA)
    (VJ/ADVP +/EFN))
/SFN)
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 근수 공장은 상당히 규모가 크다.

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

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 무친가가
6.2 NP modifiers

NP modifiers adjoin onto the noun they are associated with.

고 무진 기의 풍선 기는

(NP-SBJ (NP 高 DAN
무진 기/NNC+/의/PCA)
(NP 풍선 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*.

(2장난 수신 기는

(NP (S (WHNP-1 *op*)
(S (NP-SBJ *T*-1)
  (VP 고장 난/VV+/-/EAN)))
(NP 수신 기/NNC+는/PAU))

여제 작은 140 미터 방사포를 설치한 절-151 트럭 석 태를 보았습니다.

(S (NP-ADV 여제/NNC)
(S (NP-SBJ 작/NNP+는/PAU)
  (VP (NP-OBJ (S (WHNP-1 *op*)
   (S (NP-SBJ *pro*)
     (VP (NP-OBJ 140/NNU
       작/NNX
       방사 포/NNC+를/PCA)
     (NP-COMP *T*-1)
     (VV 설치/NNC+의/XSV+/-/EAN))))
   (NP 트럭/NNC
     석/NNU
     태/NNX+를/PCA))
   보/VV+었/EPF+습 니 니다/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).

6.3.3 Relativization out of a complex noun phrase construction

In ‘수 돼’ constructions, sometimes an NP contained in the complement clause of ‘수’ seems to have undergone relativization. Since ‘clause + 수’ 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.

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.
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 ‘가'. 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.

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 ‘가'. 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.
6.3.6 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.

roredatathat 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.

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(NP 該「/NNC
    該**/NNC+的 /PAU))
(NP 是「/VJ+될/PA)
./SFN)

6.3.7 Relative clauses with Determiner

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

이 빨간 색들이 도토리.

(S (NP-SBJ (DANP 的 /DAN)
    (NP (S (WHNP-1 *op*)
          (S (NP-SBJ *T*=-1)
              (ADJP 電擊/VJ+的 /EAN)))))
    (NP 該「/NNC+的 /XSF+的 /PCA))
    (VP (NP 是「/NNC+的 /CO+的 /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 該**/NNC+的 5중 **/VP
(NP (S (NP-SBJ R-116/NFW
       該**/NNC+的 /PCA)
       (VP (NP-COMP 5/NNU
           該**/NNC+的 /PAD)
           (VV 是**/NNC+的 /XSV+的 /EFN)))))
       (NP 該**/NNC+的 /PAU))

Some common nouns that frequently occur as heads of a complex NP include ‘경우, 동안, 的, 다음, 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 입고 있는 것이 눈에 띄었거든요.

(S (NP-SBJ (S (NP-SBJ 귀/DAN 사람/NNC+들/XSF+의/PCA)
  (VP (VP (NP-OBJ 군복/NNC+들/PCA)
    (V/VV+으로/EAU)
    (VP 귀/VX+를/EAN))
  (NP 귀/NNX+의/PCA))
  (VP 귀-Comp 논/NNC+에/PAU)
  (V/VV+있/EPF+가/꼬/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 구/NPN+의/PCA)
    (VP (NP-OBJ *T*-1)
      보/VV+으로/EAN))
  (NP 귀/NNX+은/PAU))
  (VP 귀/NPN 봉/NNX+의/CD+을/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 ‘-ㄹ/을’.

아마 우리 탱크가 공격 시에 그 도토를 사용하기로 되어 있었을 것입니다.

(S (ADVP 아마/ADV)
  (S (NP-SBJ 우리/NPN 탱크/NNC+의/PCA)
    (VP (VP (VP (NP-ADV 공격/NNC+히/PAU)
      (VP (NP-OBJ 귀/DAN 도토/NNC+들/PCA)
        (V/VV+용/EXS+의/EC5)))
      되/VX+있/EAU)
    (V/VV+있/EPF+을/EAN)
    (V/VV+있/NNX+의/CD+을/EFN)))
./SFN)

• Clause + ‘테’, ‘있’

건전지를 보충받는 데는 적절되는 일이 없지요.

(S (NP-ADV (S (NP-SBJ *pro*)
  (VP (NP-OBJ 건전지/NNC+들/PCA)
    (V/VV+보충/NNC+받/XSV+을/EAN)))
  (NP 테/NNX+을/EAN))

20
(S (NP-SBJ (S (NP-SBJ *pro*)
    (VP (VV 地/NNC+動き/XSV+눈/EAN)))
    (NP 뒤/NNC+의/PCA))
  (ADJP 없/VJ+토/EFN))
./SFN)

Note that ‘地’ can also be a head of a relative clause. In this case, ‘地’ usually denotes ‘place’.

연대의 지위부가 연대 지위부가 있던 데로 이동해 온다고 들은 적은 있습니까.

(S (NP-SBJ (S (NP-SBJ *pro*)
    (VP (S-COMP (NP-SBJ (NP 뒤/DAN 연대/NNC+의/PCA)
      (NP 地/NNC+의/PCA)))
    (VP (NP-COMP (S (WHNP-1 *op*)
      (S (NP-SBJ 연대/NNC 地/NNC+의/PCA)
        (ADJP (NP-COMP *T*-1)
          없/VJ+토/EFN))
      (NP 地/NNC+의/PCA)
    (CV (VV 이동/NNC+의/XSV+의/ECS)
      없/VV+느림/EFN))
      없/VV+토/PAU))
    (ADJP 없/VJ+습니야/EFN))
./SFN)

• Clause + ‘수’

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

그들에 말을 너무 날고 적게 해서 잘 알아들을 수가 없었습니까.

(S (S (NP-SBJ 뒤/NPN+들/XSF+의/PCA)
    (VP (NP-OBJ 말/NNC+을/PCA)
      (VP (ADVP (ADVP 너무/ADV+土/PAU)
        (ADVP (ADV 적/VJ+土/ECS))
      (VP 맘/VV+느림/ECS)))))
(S (NP-SBJ (S (NP-SBJ *pro*)
    (VP (ADVP 적/ADV)
      (VP 말/VO+을/EAN))
    (NP 수/NNX+의/PCA)
  (ADJP 없/VJ+습니야/EFN))
./SFN)

• Clause + ‘적’

In general, the function tag for the NP headed by ‘적’ is -COMP. This is to capture the intuition that ‘적’ 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 ‘
‘ or ‘
‘). 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 작성약관에 어렵다.

(S (NP-SBJ (S (NP-SBJ *pr*)))
 (VP (NP-OBJ 보고서/NNX+들의/PCA)
  (VV 작성/NNC+의/XSV+의/ENM+의/PCA)))
 (ADJP 어렵/\(VJ^{+}\)/다/EFN))
 ./SFN)

6.6 Equative NP

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

2 명의 부주대장, 족 정적 부주대장과 군사 부주대장이 있슴니다.

(S (NP-SBJ (NP (NP 2/NNN)
 명/NNX+의/PCA)
 (NP 부주대장/NNC))
 ,/SCM
 (ADCP 족/ADC)
 (NP (NP 정적/NNC
 부주대장/NNC+의/PCJ)
 (NP 군사/NNC
 부주대장/NNC+의/PCA)))
 (ADJP 없/\(VJ^{+}\)/​​습/EFN))
 ./SFN)
7 Verb Phrases

7.1 Verb complementation

Internal arguments are complements of verbs.

모출 데모들을 받았음니다.

(S (NP-SBJ *pro*)
  (VP (NP-OBJ 모 출/NNC
       데모/NNC+을/PCA)
       받/VV+았/EPF+_EP+CF/EFN)
  ./SFN)

사령관에게 보고서를 보냈습니다.

(S (NP-SBJ *pro*)
  (VP (NP-COMP 사령관/NNC+에게/PAD)
       보고서/NNC+을/PCA)
       보 내!/VV+였/EPF+다/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 데모들을 많이 받았음니다.

(S (NP-SBJ *pro*)
  (VP (NP-OBJ 모 출/NNC
       데모/NNC+을/PCA)
       (VP (ADVP 많이)
           (VP 받/VV+았/EPF+CF/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 송신기 는 뒤 뒤편으로 구성되어 있겠죠?

(S (NP-SBJ (NP 그/DAN
            무진기/NNC+의/PCA)
            송신기/NNC+는/PAN)
       (VP (NP-COMP 무엇/NPN
            무엇/NPN+으로/PAD)
(VV 구성/NNC+되/XSV+이/EAN))
업/VX+지/EFN)
?/SFN)

선문관 작작을 가진 사람들의 그렇게 많지 않다.

(S (NP-SBJ (S (WHNP-1 *op*)
(S (NP-SBJ *T*-1)
(VP (NP-OBJ 선문관/NNC 작작/NNC+을/PCA)
가지/VV+로/EA))
(NP 선당/NNC+을/XSF+의/PCA))
(VP (ADJP 모물/ADV)
(ADJP 많/VJ+지/EAU))
알/VX+지/EFN)
?/SFN)

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.

웨 그 도토 상에서 지뢰를 탐지하러도 되어 있었겠어?

(S (NP-SBJ *pro*)
(VP (VP (ADVP 왜/ADV)
(NP-ADV 그/DAN 도토/NCC 상/NNC+에서/PAD)
(VP (NP-OBJ 작작/NNC+을/PCA)
(VV 탐지/NNC+의/XSV+의/PCA))
되/VX+이/EAN)
알/VX+었/EFN)
?/SFN)

7.2.3 Auxiliary adjectives

Auxiliary adjectives such as `만약하다, 득작하다, 법작하다` 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 만하다.

(S (NP-SBJ 그건/NPN+은/PAU)
(VP (VP (NP-ADV R-116/NFW
무전기/NNC+으로/PAD)
(VP 동작/VV+으로/EAN)
만약/VX+지/EFN))
)?/SFN)
7.2.4 Auxiliary predicative nouns

Auxiliary predicative nouns such as ‘것이다, 봐여다, 향이더’ 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 품배에서는 언제무엇을 고체할 건가?

(S (NP-ADV 6/NNU 품배/NNC+어esterday/PAD+는/PAU)
 (S (NP-SBJ *pro*)
  (VP (NP-ADV 언제/NNC)
   (VP (NP-OBJ 무엇/NNC+될/PAC)
    (VV 고/NNC+어esterday/XSV+= /EAN))))
 (VX 것/VNX+어esterday/CO+담다/EFN))
 ?/SFN)

이 선물은 연인군 집에도 있는 것보다 약 1.5도 좀 달라 봐여다.

(S (NP-SBJ 이/NAN
 선/NNC+될/XSF+은/PAU)
 (VP (ADJP (NP-ADV (S (WHNP-1 *op*)
  (S (NP-SBJ *T*-1)
   (ADJP (NP-COMP 연인군/NNC
    집도/NNC+어esterday/PAD)
     약/VJ+는/EAN))))
  (NP 것/VNX+어esterday/보다/PAD))
 (NP-ADV 이/NAN
  1.5/NNU
  도/NNX+됨/XSF)
 (ADJP 달라/VJ+은/EAN))
 (VX 봐여다/VNX+어esterday/CO+담다/EFN))
 ./SFN)

지도가 있으면 제가 그것을拿来 됐 수 있음할테요.

(S (S (NP-SBJ 지도/NNC+여esterday/PCA)
 (ADJP 았/VJ+은/ECS))
 (S (NP-SBJ (S (NP-SBJ 쌈/NPP+여esterday/PCA)
  (VP (VP (NP-OBJ 쌈/NPP+은/PAC)
    쌈/VV+어esterday/EAU)
    네/VERB+으/EAN))))
 (NP 쌈/VNX))
 (VP (ADJP 았/VJ+은/EAN)
  (VX 쌈/VNX+어esterday/CO+담다/EFN)))
./SFN)

이간 맹군을 알 테니까 그 거리는 약 1 걸로씩밀름 될 겨니다.
7.2.5 Complex auxiliary predicate

Complex auxiliary predicates such as ‘것 걸다’ 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.

종ateg에는 지금 영우를 수행하는 데 필요한 탄약이 없는것 같습니다.

(S (NP-SBJ *pro*)
 (VP (VP (NP-OBJ 작건/NNC 행근/NNC+을/PCA)
   격/VV+=/EAN)
 (VX 작건/NNX+의/CO+/N+가기/ECS))))
 (S (NP-SBJ 꼬/DAN 꼬/NNC+는/PAU)
 (VP (VP (NP-Comp 까/DAN 1/NNU 걸토득/NNX+품/XSF)
   격/VV+=/EAN)
 (VX 까/NNX+의/CO+/N+가기/EFN))))
./SFN)

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 ‘먹’. It follows a Sino Korean noun (Chinese origin nouns) which can be marked with accusative case marker.

수먹을먹다
손잡음을먹다
보고음을먹다
필요로먹다
Some other light verbs include ‘먹다’, ‘tolower’ and ‘받다’. ‘먹다’ occurs with a nominative marked NP, and ‘받다’ 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 테이블 옆 소테에서 수력발전사를 발니다.

(S (NP-SBJ 그들은)
  (VP (NP-OBJ 무전기/NNC+을/PCA)
    (VP (NP-ADV 테이블/NNC
      소테/NNC+에서/PAD)
      (VP (NP-OBJ-LV 수력발전사/NNC+을/PCA)
        (LV 발/VV+을/ EFN))))
  ./SFN)

중대는 그 주택수 49.75를 언제 알당발았는가?

(S (NP-SBJ 중대/NNC+는/PAU)
  (VP (NP-OBJ 그/NNC/PCA)
    주택수/NNC
    49.75/NNU+을/PCA)
  (VP (NP-ADV 언제/NPN)
    (VP (NP-OBJ-LV 알당발/NNC)
      (LV 발/VV+을/EPF+는 가/EFN))))
  ./SFN)

그 보도가 백탑의 난 원인을 말해 보시오.

(S (NP *pro*)
  (VP (NP-OBJ (S (WHNP *op*)
    (S (NP-SBJ 그/NNC+을/PCA)
      (VP (NP-LV 백탑/NNC+이/PCA)
        (LV 합/VV+을/EAU)))))
  ./SFN)
If the base noun is modified, -LV tag should be given to the highest projection of the base noun.

도 제 전구가 122 미리 고사로 태태에서의 URAL-375 트릭을 듣다가 말하다가 기억이 납니다.

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 ‘-어요/-어요’ 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, 나타나다, 남다, 막다’.

그는 전공관을 감아 넘어갔다.

(S (NP-SBJ 그는)
  (VP (NP-OBJ 전공관/NNC+을/PCA)
   (CV 갑/VV+의/ECS
    남/VV+에/EPF+다/EFN))
 ./SFN)
아마 너를 감옥에 잡아 남가까지 알지도 못할。

(S (NP-SBJ *pro*)
  (VP (VP (ADVP 야/ADV)
    (VP (NP-OBJ (S (NP-SBJ *pro*)
      (VP (NP-OBJ 너/NNP+을/PCA)
       (NP-COMP 감옥/NNC+에/PAF)
        (CV 갑/VV+의/ECS
         남/VV+에/EPF+가지/PAU))))
    야/VV+으로/EC+도/PAU))
 모 드/VX+의/EFN)
 ./SFN)

7.5 VP modification

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

우리는 무진가를 오랫동안 조작하지 못합니다.

(S (NP-SBJ 우리의/NPN+은/PAU)
  (VP (VP (NP-OBJ 우리의/NPN+을/PCA)
   (VP (NP-ADV 오랫동안/NNC)
    (VP (VV 오탕/NNC+의/XSV+지/EAU)))))
 모 드/VX+의/EFN)
 ./SFN)

프로들을 잡으면 지체없이 보고해야 합니다.

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

(\textit{S (NP-SBJ 부대/NNC 명장/NNC+은/PAD)}
\textit{(VP (ADVP 동상/ADV)}
\textit{(NP-ADV 않으/NNC+도/PAD)}
\textit{(VP (VV 약탈/NNC+의/XSV+에 닿/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 앗았다

(\textit{VV 보고/NNC+의/XSV+에/EPP+에 닿/EFN})

보고되었다

(\textit{VV 보고/NNC+의/XSV+에/EPP+에 닿/EFN})

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

지휘 통솔 안 많다.

(\textit{VV (VV 지휘/NNC)}
\textit{(VV 통솔/NNC+의/XSV+에 닿/EFN)})

승격 합계 많다.

(\textit{VV (VV 승격/NNC)}
\textit{(VV 합계/NNC+의/XSV+에 닿/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.

날이 많다.

(\textit{S (NP-SBJ 날/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.

유영락다

(VJ 유영/NNC+락/XSJ+락/EFN)

9 Adverb Phrase

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

밭이다

(ADVP 밝/ADV)

9.1 Adjunction site of adverb phrase

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

전투식 에는 통신망을 잘 응용해야 합니다.

(S (NP~ADV 전투/NNC 식/NNX+*/PAD+는/PAU)
  (VP (VP (NP~OBJ 통신망/NNC+을/PCA)))

./SNF)
(VP (ADV P 장/ADV)
  (VP (VV 읍용/VNC+약/XSV+여약/ECS))
  약/VX+ 느 닥/EFN))
./SFN)

먼저 년 조출식 공중선의 높임을 조절하였다.

(S (ADV P 먼저/ADV)
 (S (NP-SBJ 그/ pro+))
 (VP (NP-OBJ (NP 년/NPN 조출식/NNC 공중선/NNC+의/PCA)
   (NP 년/NNC+을/PCA)))
 (VV 조절/NNC+약/XSV+여/EFN))
./SFN)

Sometimes an adverb modifies another adverb, especially adverbs of degree such as ‘너무, 약속, 매우, 더, 약간’. In the example below, ‘너무나도’ does not modify the verb but rather the following adverb ‘작게’.

그 친구들의 말을 너무나도 작게 했다.

(S (NP-SBJ 그/ DANP 친구/NNC+들/XSF+의/PCA)
 (VP (NP-OBJ 말/NNC+을/PCA)
  (VP (ADV P 너무나/ADV+도/PAU)
   (ADV P 작/VJ+게/ECS))))
 (VP 약/VV+여/EF+/EFP+달/EFN)))
./SFN)

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

열마나 오랫동안

(NP (ADV P 열마나/ADV)
 (NP 오랫동안/NNC))

가의 모든

(DANP (ADV P 가의/ADV)
 (DANP 모든/DAN))

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 친구들의 말을 너무나도 작게 했다.

(S (NP-SBJ 그/ DANP 친구/NNC+들/XSF+의/PCA)

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(VP (NP-OBJ 말/NNC+을/PCA)
   (VP (ADVP (ADV 걷/VJ+게/ECS))
     (VP 야/VV+었/EPF+다가/EFN)))
./SFN)

Nouns suffixed with ‘-적으로’ are also derived adverbs.

단계적으로

(ADVP (ADV 단계/NNC+적으로/XSF/으로/PAD))

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

전연적으로 움직이동을

(NP-OBJ (NP 전연/NNC+적으로/XSF)
   (NP 움직이동/NNC
    이동/NNC+으로/PCA)))

9.3 Adverb with an NP complement

Some adverbs such as ‘악어균, 달리, 갈리, 함께, 둘론’ take an NP complement to form an adverb phrase.

포병 직원 부대로 악어균

(ADVP (NP-COMP 포병/NNC
   직원/NNC
    부대로/NNC+으로/PAD)
   악어균/ADV)

고등 학생과 대학생은 둘론

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

이와 같이

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

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

그 부대는 장갑차를 핵심으로 편성돼 있습니까.
10 Copular Sentences

In copular sentences, a noun with a copula marker (‘의’) 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 소련제입니까.

(S (NP-SBJ R-106/NFW+도/PAU)
 (VP (NP 소련제/NNC+의/CD+는/니까/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 뒤다, 아니타, 필요하다, 좋하다, 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.

그것이 문제가 되었다.

(S (NP-SBJ 그것/NPN+이/PA) (VP (NP-COMP 몸/NNC+이/PA) 되/VV+있/EPF+있다/EFN) ./SFN)

그것이 문제가 아니었다.

(S (NP-SBJ 그것/NPN+이/PA) (ADJP (NP-COMP 몸/NNC+이/PA) 아니/VA+있다/EFN) ./SFN)

철수가 장갑이 있다.

(S (NP-SBJ 철수/NPR+이/PA) (ADJP (NP-COMP 장갑/NNC+이/PA) 없/VA+있다/EFN) ./SFN)

철수가 장갑이 없다.

(S (NP-SBJ 철수/NPR+이/PA) (ADJP (NP-COMP 장갑/NNC+이/PA) 없/VA+있다/EFN) ./SFN)

지금도 기기에 어떤 부분이 있는지 의심스럽습니다.

(S (NP-SBJ *pro*) (VP (S-COMP (NP-ADV 지금/NNC+이/PAU) (NP-COMP-1 이/PAU/NPN+있/PAU) (S (NP-SBJ 의심/NNC+이/PA) 부담/NNC+이/PA) (ADJP (NP-COMP *T*-1) 없/VA+는지/EFN+는/PAU)) (VJ 의심/NNC+스럽/XSJ+싶/PAU) )
전 그 무전문을 합병토 본 적이 없습니다.

(S (NP-SBJ 적/NPF+VP/PAU)
  (ADJP (NP-COMP (S (NP-SBJ *pro*)
  (VP (NP-OBJ 그/DAN 무전문/NNC+을/PCA)
  (VP (NP-ADV 합병/NNC+도/PAU)
  (VP 보/VV+를/EAN))))
  (NP 적/NNX+의/PCA))
  없/VJ+습니ابة/EFN))
).

11.2 Statives

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.

통신 기재사항 합력습니닭.

(S (NP-SBJ 통신/NNC
  기재/NNC+의/PCA)
  (S (NP-SBJ 합력/NNC+의/PCA)
  (ADJP 통/VJ+습니닭/EFN))))
).

Adjectives such as ‘억벌당, 참담’ 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.

부병 때때에서는 어떤 직책이 보증약가 야목은가?

(S (NP-ADV 부병/NNC
  때때/NNC+예시/PAD+는/PAU)
  (S (NP-SBJ 어린/DAN
  직책/NNC+의/PCA)
  (S (NP-SBJ (S (NP-SBJ *pro*)
  (VP (NP-OBJ *pro*)
  (VP 보/VV+를/EAN+의/PCA))))
  (ADJP 어린/VJ+은/의/EFN))))
).

Compare the above example with the following one, where NP ‘억벌 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 근관들도 정치 근관을 동양을 조사합니다.

(S (ADVP (ADV 주 갈/NNC+적/XSF+으로/PAD))
 (S (NP-SBJ 근관/NNC+들/XSF+의/PCA)
  (VP (NP-OBJ 정치/NNC 근관/NNC+을/PCA)
   (VP (NP-OBJ 동양/NNC+을/PCA)
    (VV 조사/NNC+의/XSV+니익/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 근관은 주가적으로 근관들이 동양을 조사합니다.

(S (NP-OBJ-1 정치 근관은)
 (ADVP (ADV 주 갈/NNC+적/XSF+으로/PAD))
 (S (NP-SBJ 근관/NNC+들/XSF+의/PCA)
  (VP (NP-OBJ *T*-1)
   (VP (NP-OBJ 동양/NNC+을/PCA)
    (VV 조사/NNC+의/XSV+니익/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.

무엇양이 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.

그런데 몽산 공격 덤척의 포병 사격에 왜진사 네 명의 촌설됐습니다.

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.

3 덤척은 감시망을 협박을 운용하고 있었습니다.

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.

두 개 있자요.

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.
두 개 있지요.

(S (NP-SBJ 두/NNU 개/NNX)
  (ADJP 값/VJ+치요/EFN))
./SFN)

Note that not all numerals have adverbial usage. In the following case, the numeral NP is an argument of the verb 되다.

원래 1개 포대에는 인원이 약 50명 됩니다.

(S (ADVP 원래/ADV)
  (NP-ADV 1/NNU 개/NNX 포대/NNC+ dạ/PAD+논/PAU)
  (S (NP-SBJ 인원/NNC+의/PCA)
    (VP (NP-COMP 약/DAN 50/NNU 명/NNX)
     되/VV+니 먹/EFN))
./SFN)

14 Fronted elements

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.

14.1 Fronted arguments

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

권한을 누가 가지고 있지요?

(S (NP-OBJ-1 권한/NNC+을/PCA)
  (S (NP-SBJ 누가/NPN+의/PCA)
    (VP (VP (NP-OBJ *T*-1)
        값/VX+의/EFN)
     되/VV+고/EAU)
  ./SFN))

14.2 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.

가기엔 573 운성 포병 연대와 닫문 포병 연대 2개가 있는데, 박격포 부대의 반항공포병을 등도 있었습니다.

(S (S (NP-COMP-2 거/NPN+의/PAD+논/PAU))
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.

40
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 ‘arily/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 ‘만해/PAD’ instead of ‘를 /PCA’, the causee argument is tagged as NP-COMP.
정석, 경계 및 전원작전을 심하게 악기 휴대 연방 우방시설은 연대 우방 경계선
부근에 위치합니다.

(S (S (NP-SBJ *pro*)
 (VP (NP-COMP (S (NP-SBJ *pro*)
 (VP (NP-OBJ (NP 정석/NNC)
 ,/SCM
 (NP 경계/NNC)
 (ADCP 및/ADC)
 (NP (NP 기원/NNC)
 (NP 작전/NNC+움/PCA)))
 (S-COMP (NP-SBJ *pro*)
 (ADJP 심/VJ+계/EAU))
 악/VV+경/ECS))))

위가/VV+경/ECS)
(S (NP-SBJ 연방/NNC 우방/NNC 시설/NNC+은/PAU)
 (VP (NP-COMP 연대/NNC 우방/NNC 경계선/NNC 부근/NNC+에/PAU))
 (XV 위가/NNC+악/XSV+도/EFN)))

./SFN)

관측자는 적의 무선 전파수 안테나 목표들에 대한 작용을 적의 포반에 송신하도록 했습니다.

(S (NP-SBJ 관측/NNC+작/XSF+은/PAU)
 (VP (NP-COMP 적의/NPN
 무선/NNC
 전파수/NNC+안테나/PAU))
 (S-COMP (NP-SBJ *pro*)
 (VP (NP-OBJ (S (WHNP-2 *op*)
 (S (NP-SBJ *T*+2)
 (VP (NP-COMP 이/DAN
 목표/NNC+등/XSF+에/PAU)
 태양/VV+도/EAN))
 (NP 목표/NNC+등/PCA))
 (NP-COMP 적의/NPN
 포반/NNC+에/PAU))
 (XV 송신/NNC+악/XSV+도/ECs))))
 악/VV+에/EPF+음/EFN)

./SFN)
16 Object-to-Subject Raising

16.1 Sentences with ‘만약다’

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

어 챗상은 야외들의 을 만약다.

What is interesting about sentences with ‘-ㄹ/-을 만약다’ 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 ‘어 챗상은’ 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 ‘어 챗상은’, but is ‘야외들의’.

These syntactic properties of sentences with auxiliary predicate ‘만약다’ 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 ‘만약다’, 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 챗상은 야외들의 을 만약다.

(S (NP-SBJ-1 어/DAN
  챗상/NNC+는/PAU)
  (S (NP-SBJ 야외/NNC+들/EXF+어/PCA)
    (VP (VP (NP-OBJ *T*-1)
      쳄/VV+을/EA)N)
    만약/VX+다/EFN))
  ./SFN)

이 영확가 청소년에게 울 만약다.

(S (NP-SBJ-1 어/DAN
  영확/NNC+가/PCA)
  (S (NP-SBJ 청소년/NNC+어/PCA)
    (VP (VP (NP-OBJ *T*-1)
      보/VV+을/EA)N)
    만약/VX+다/EFN))
  ./SFN)

이 영확가 청소년에게 추천할 만약다.
(S (NP-SBJ-1 의/DAN
   영화/NNC+ 꼴/PCA)
(S (NP-SBJ *pro*)
  (VP (VP (NP-OBJ *T*+1)
       (NP-COMP 청소년/NNC+에게/PAD)
       (VV 추천/NNC+ 악/XSV+을/EAN))
    만약/VX+ 맘/EFN))
./SFN)

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.

(\begin{align*}
\text{청소년의 이 영화를 볼 만약다}.
\end{align*})

(S (NP-SBJ 청소년/NNC+의/DAN)
  (VP (VP (NP-OBJ 이/DAN
       영화/NNC+를/PCA)
       보/VV+을/EAN)
    만약/VX+ 맘/EFN)
./SFN)

이 영화를 청소년의 볼 만약다.

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

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
‘가’ are the same, namely ‘철수 가’.

철수 가 가게 되었다.

(S (NP-SBJ 철수/NPR+가/DAN)
  (VP 가/VV+ 가/EAU)
  되/VX+ 맘/EFN+ 맘/EFN)
./SFN)

However, in some other cases, the subject of the sentence seems to have originated from the
object/complement position of the main verb. For instance, in the example below, the sentential
subject '이게는' is also the object of the main verb '쓰게'. 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.

어 ‘기가’ 못쓰 게 되었다.

(S (NP-SBJ-1 ‘기가’)
 (S (NP-SBJ *pro*)
   (VP (VP (VP (NP-OBJ *T*-1)
             (VP (ADVP 못/ADV)
                 (VP 쓰/*VV+/~EAU)))
                 되/*VX+있/*T/*+/EFN))
         /SFN))

유래 예어 양식은 대개의 쓰기 없이는 쓰지 못하게 되어 있슴니다.

(S (NP-SBJ-1 유래/NNC
     예어/NNC
     양식/NNC+은/PAU)
 (S (NP-SBJ *pro*)
   (VP (VP (VP (ADVP (NP-COMP (NP 대개장/NNC+의/PCA)
                 (NP ‘기가’/NNC))
                 없/ADV+는/PAU)
                 (VP (NP-OBJ *T*-1)
                 쓰/*VV+/~EAU))
                 못/VP+있는/EAU)
       되/VP+있/EAU)
       것/VP+습니/EAU))
     /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 ‘그리고’ or ‘또는’ is represented at the same level as the coordinated phrases. See §4.3 for examples of clausal coordination.

우리는 송신거나 수신거를 가끔 손절한다.

(S (NP-SBJ 우리는)
 (VP (NP-OBJ (NP 송신거/NNC+의/PCJ)
         (NP 수신거/NNC+의/PAU))
       (VP (ADVP 가끔/ADV)
         /SFN))
(VP (VV 촌질/NNC+언/XSV+달/EFN)))
./SFN)

송선 기 그림과 수선 기가 고장났다.

(S (NP-SBJ (NP 송선 기/NNC)
  (ADCP 그림고 /ADC)
  (NP 수선 기/NNC+언/PCA))
  (VP 고장 난/VV+압/EPF+달/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 우편기에는 HAK-24형 승선지를 쓰고 R-116 우편기에는 승티-80 건전지를 쓰니 니다.

(S (NP-SBJ 우리는)
  (VP (VP (NP-ADV R-106/NFW
       우편 기/NNC+언/PAU)
       (VP (VP (NP-OBJ HAK-24/NFW 옹/NNC 승선 지/NNC+들/PCA)
           쓰/VV+고/ECS))
       (VP (VP (NP-OBJ R-116/NFW 우편 기/NNC+언/PAU)
           (VP (NP-OBJ 승티-80/NNC 건전 지/NNC+들/PCA)
               쓰/VV+/dir 달/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.

송장보장은 박도 그 밑에서 금의 최고 사령관으로 있고 전근을 직위 동솔한다.

(S (S (NP-SBJ 송장보장/NNC+은 /PAU)
  (ADJP (NP-ADV 박도/DAN 근/DAN 금/NNC+에서/PAD)
  (NP-ADV (NP 금/NNC+의/PCA)
  (NP 최고/NNC 사령관/NNC+으로 /PAD))
  (ADJP 옆/VJ+고/ECS)))
  (S (NP-SBJ *pro*)
  (VP (NP-OBJ 전/DAN 금/NNC+을/PCA)
  (VV (VV 직위/NNC)
  (VV 동솔/NNC+언/XSV+달/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 or S level coordination, the predicate in the first conjunct of the coordinated structure is inflected with ‘-고’ or ‘-고 달다’. A phrase containing a predicate inflected with all other endings such as ‘-서’, - 면서, or ‘-약’ projects to S and is adjoined to the following VP or S.

In a VV level coordination, however, the first verb can be inflected with ‘-서’, ‘-면서’, ‘-약’ as well as ‘-고’ or ‘-고 달다’. 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.

방어 시멘 예광탄을 작주 사용하지 않조.

(S (NP-ADV 방이/NNC 시/NNX+에/PAU+/PAU)
  (S (NP-SBJ *pro*)
    (VP (NP-Obj 예광탄/NNC+을/PCA)
      (VP (ADP 안/ADV)
        (ADVP 야무르기/ADV)
        (VP (VV 예광탄/NNC+을/PCA)
          (VV 주격/NNC+야/XSV+이/ENM))))
      (ADJP 항득/VJ+에/PAU+)
      (EFN))
./SFN)

Postverbal negation is annotated as an auxiliary verb which takes a VP as a complement.
(VP (ADVP 만악/ADV)
  (VP (VV 사용/NNC+하/XSV+지/EAU)))
엄/VX+조/EFN))
./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, (담배의 흡연을 턱밑 위에 놓으면서) 어기 악음 대로 턱底下.

(S (INTJ 작/IJ)
,./SCM
(PRN -LRB-/SLQ
  (S (NP-SBJ *pro*)
   (VP (NP-OBJ (NP 담배/NNC+하/PCJ)
        (NP 흡연/NNC+하/PCA))
    (NP-COMP (NP 흡연/NNC)
         (NP 위/NNC+하/PAD))
       들/VV+으러고/ECS))
   -RRB-/SRQ)
  (S (NP-SBJ *pro*)
   (VP (NP-OBJ &/NPN)
    (VP (NP-ADV 담배/NNC+하/PAD)
         (VP 무/VV+이요/EFN))))
./SFN)

만약 태태에서 태태 무전방에 있는 무전소를, 애들 들이 두 세 근데, 동시에
모출하면서 에이 원 모출태로 사용하는 가?

(S (S (ADVP 만악/ADV)
  (NP-ADV 태태/NNC+어서/PAD)
(S (NP-SBJ *pro*)
  (VP (NP-OBJ (S (WHNP-1 *op*)
        (S (NP-SBJ *T*-1)
         (ADJP (NP-COMP 태태/NNC
              무전방/NNC+하/PAD)
        VJ+는/EAN))))
  (NP 무전/NNC+하/PCA))
  (VP (PRN ,./SCM
       (S (NP-SBJ *pro*)

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(VP (NP-OBJ 에/NNC+을/PCA
d/VV+여/ECS))
(NP 두/NNU
서/NNU
근데/NNX+의/PAU)
,(/SCN)
(NP-ADV 동시/NNC+에/PA)
(VP (VV 오늘/NNC+야/XSV+먹네/ECS))))
(S (NP-SBJ *pro*)
(VP (NP-OBJ 어떤/DAN
모습/NNC
태호/NNC+을/PCA)
(VV 사용/NNC+야/XSV+는 것/EFN))))
?(/SFN)

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

마지막으로 정치보이부에ㄴ 보이 지도원 (소장) 1명이 있ذاكرة.

(S (NP-ADV 마지막/NNC+으로/PA)
(NP-COMP-1 정치/NNC
보이부/NNC+에/PA+는/PAU)
(S (NP-SBJ 보이/NNC
지도원/NNC
(PRН -LRB/-SLQ 소장/NNC
-RRB/-SRQ)
1/NNU
말/NNX+의/PCA)
(ADJP (NP-COMP *T*-1
있/VJ+있/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 태대로 입무는 다음과 같다: (1) 전연의 후방지역에 첨부하여 적의 작위 및 통신망을 막아서 전략; (2) 긴급 시설을 습격하여 적의 후방을 교란한다; (3) 그 후방지역에 제2 전신을 형성하여 적에게 전후방 양면전투를 강요한다.

(S (S (NP-SBJ (NP 경보병/NNC
태대로/NNC+의/PCA)
(NP 업무/NNC+은/PAU))

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(ADJP (NP-COMP 닭음/NNC+과/PAD)

각/VJ+닭/EFN))

/:SSY

(S (LST -LRB/-SLQ 1 -RRB/-SRQ)

(S (S (NP-SBJ *pro*)

(VP (NP-COMP (NP 전연/NNC+의/PCA)

(NP 우방/NNC 지역/NNC+의/PAD))

(VV 참투/NNC+의/XSV+의/EC))

(S (NP-SBJ *pro*)

(VP (NP-OBJ (NP 적/NNC+의/PCA)

지위/NNC)

(ADCP 및/ADC)

(NP 통신망/NNC+을/PCA))

(VV 막벽/NNC+의/XSV+있는/EFN))))

;/:SSY

(S (LST -LRB/-SLQ 2 -RRB/-SRQ)

(S (NP-ADV (S (NP-SBJ *pro*)

(VP (NP-OBJ 근사/NNC

시설/NNC+을/PCA)

(VV 습격/NNC

막괴/NNC+의/XSV+으로/EFN))))

(S (NP-SBJ *pro*)

(VP (NP-OBJ (NP 적/NNC+의/PCA)

(NP 우방/NNC+을/PCA))

(VV 고란/NNC+의/XSV+있는/EFN))))

;/:SSY

(S (LST -LRB/-SLQ 3 -RRB/-SRQ)

(S (S (NP-SBJ *pro*)

(VP (NP-ADV 근/DAN

우방/NNC

지역/NNC+의/_PAD)

(VP (NP-OBJ 적/XPF+2/NNU

전신/NNC+을/PCA)

(VV 형성/NNC+의/XSV+의/EC)))

(S (NP-SBJ *pro*)

(VP (NP-ADV 적/NNC+의/PAD)

(VP (NP-OBJ 전우방/NNC

양인/NNC

전투/NNC+을/PCA)

(VV 강요/NNC+의/XSV+있는/EFN))))

./SFN)
20 Empty Categories

20.1 Empty argument

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

우체국에서 몇 개나 운용하는 가?

(S (NP-SBJ *pro*)
  (VP (NP-OBJ 우체국/NCC+을/PCA)
   (VP (NP-ADV 몇/NNU 개/NNX+어/PAD)
    (VP (VV 운용/NNC+이/ESV+는 가/EFN))))
  /SFN)

여섯방 12시에 발았음니다.

(S (NP-SBJ *pro*)
  (VP (NP-ADV 여섯방/NNC)
   (NP-ADV 12/NNU 개/NNX+어/PAD)
   (VP (NP-OBJ *pro*)
    발/VV+었/EPF+습 달타/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.

수신기로 우려는 가끔 손질합니다.

(S (NP-OBJ-1 수신기/NCC+을/PAU)
  (S (NP-SBJ 우려/NPN+는/PAU)
   (VP (NP-OBJ *T*-1)
    (VP (ADVP 가끔/ADV)
     (VP (VV 손질/NNC+이/ESV+을/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.

고무전기가고장난현인이무엇언가?

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 *??*).

크기는42센티,높이는7센티,색호가42센티점됩니다.
20.4.2 VP deletion

The deleted VP is annotated as (VP *?*).

대대 체위망은 기본 주격수 46.54 백감포에서, 시격 체위망은 기본 주격수 47.36 백감포에서 운용되고 있음을 달.

(S (S NP-SBJ 대대/NNC 체위망/NNC+은/PAU)
 (VP (NP-ADV 기본/NNC 주격수/NNC
  46.54/NNU 백감포/NNX+에서/PAD)
   (VP *?*))
 ,/SCM
 (S (NP-SBJ 시격/NNC 체위망/NNC+은/PAU)
 (VP (NP-ADV 기본/NNC 주격수/NNC
  47.36/NNU 백감포/NNX+에서/PAD)
   (VP (VV 운용/NNC+되/XSV+고/EAU))
    없/VX+쉽 닥/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.

철수는 밥을 먹고 손이하는 물을 마시고 있겠다.

(S (S NP-SBJ 철수/NPR+는/PAU)
 (VP (VP (NP-OBJ 밥/NNC+을/PCA)
    먹/VV+고/ECS)
     (VX *?*))
 (S (NP-SBJ 손이/NPR+는/PAU)
 (VP (VP (NP-OBJ 물/NNC+을/PCA)
    마시/VV+고/ECS)
     없/VX+없이/EFP+답/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.

종이 종태는 "갑산 21," 백객포 종태는 "갑산 22," 그리고 백반촌포 소태는 "갑산 23"없님니다.

(S (S NP-SBJ 종이/NNC 종태/NNC+는/PAU)
 (VP "/SFQ
  (NP 갑산/NPR 21/NNU)
21 Punctuation

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.

"왜 ‘‘미혹산 1의 것’’ 고 하지?

(S (NP-SBJ *pro*)
 (VP (ADVP 왜/ADV)
  (VP (S-COMP (NP-SBJ *pro*)
   (VP "/SLQ
    (NP ‘‘미혹산/NPR
     1/NNU+의/CO+ 것/EPF+다/EFN)
    "/SRQ
     고/ADP))
   /VV+ 것/EFN))
 /SFN)

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:

‘‘전체 들을 것, 여기는’’ 어떻게 말하고

(S (NP-SBJ *pro*)
 (VP (NP-ADV "/SLQ
(NP (S (NP-SBJ 전*발셔/NNC)
  (VP (NP-OBJ *pro*)
    들/VV+/서/EAN))
  (NP 전/NNX))
 ,/SCM
 (NP 전/NPX+ Neville/PAU)
 "/SRQ)
 (ADVP 이/됨/ADV)
 (VP 말+/VV+/과/ECS))

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.

그럼, 계속 해 보자.

(S (ADCP 그림/ADC)
 ,/SCM
 (S (NP-SBJ *pro*)
  (VP (VP (VV 전/NX+발셔/NNC+으/XSV+이/EAU))
    보/VX+지/EFN))
 ,/SFN)

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

총신어, 수신어, 안테나, 그린 정도지요.

(S (NP-SBJ *pro*)
 (VP (NP (NP 총신어/NNC)
    ,/SCM
    (NP 수신어/NNC)
    ,/SCM
    (NP 안테나/NNC)
    ,/SCM
    (NP 그린/DAN
     정도/NNC+이/CD+이요/EFN))))
 ,/SFN)

21.2 Sentence-final punctuation

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

축전지 제고도 충분히 있는가?

(S (NP-SBJ 축전지/NNC
 제고/NNC+도/PAU)
 (ADJP (ADVP 충분히/ADV)
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.

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

However, when the annotator has a strong intuition that the adverb takes the S as its scope, adjoin it to S.
When a sentence has an empty subject with an adverb tagged as ADC, the adverb is adjoined to the S instead of the VP.

그리므로 기기에 학생이 전부 몇 명이냐 있었는데 그것조차 모르겠습니다.

(S (ADCP 그리므로/ADC)
 (S (NP-SBJ *pro*)
  (VP (NP-OBJ (S (NP-COMP-1 기기/VPN+목/PAD)
     (S (NP-SBJ 학생/NNC+의/PCA)
       (ADJP (ADVP 전부/ADV)
          (NP-ADV 몇/NNU 명/NNX+의/나/PAU)
          (ADJP (NP-COMP *T*-1)
            (VV+.navigator/EPF+논지/ECS)))))
   모른/VPN+한/PAU))
  모른/VPN+한/PAU))
 .(/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 토맥트 보조식 포란은 어떤 목표에 사격할 때 사용하는 가?

(S (NP-SBJ *pro*)
 (VP (NP-OBJ 고록/NNC
  토맥트/NNC
  보조/NNC+의/XSF
  포란/NNC+은/PAU)
  (VP (NP-ADV (S (WHNP *op*)
    (S (NP-SBJ *pro*)
      (VP (NP-COMP 여러/VPN+목/PAD)
        (VV 사격/NNC+의/XSV+인/PAU)))))
   (NP 날/NNC))
  (VP (VV 사격/NNC+의/XSV+논지/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 작위원은 기록책서 보고할 필요가 없지요.

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

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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.

```
( VP (ADVP 주로 /ADV)  
  (NP-ADV 이/NC+예서 /PAD)  
  (VP (VV 확인/NC+한와/ASV+의서/ECS)))  
(S (NP-SBJ 경찰/NC  
    (VP (NP-ADV 좋은/NC+의/PCA  
        (VP (VV 치사/NC+한와/ASV+의서/ECS)))  
        (S (NP-SBJ +pro*)  
            (VP (ADVP 흥미로운/ADV)  
              (NP-ADV 이의/NC+예서 /PAD)  
              (VP (NP-OBJ 확인/NC+을/PCA)  
                (VV 실시/NC+한외/ASV+의/EFN)))))  
)./SFN)
```

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.

```
( S (NP-ADV ( ,출결/NC  
            (S (NP-SBJ 적극/NC  
                (VP (NP-OBJ (S (NP-SBJ +pro*)  
                    (VP (NP-COMP (NP 생물학/NCC+전사/NCC+의/PCA  
                        (VP (NP-ADV (NP 전문가/NCC+의/PCA  
                            (NP 전문가/NCC+의/PCA  
                                (NP 전문가/NCC+의/PCA  
                                    (NP 전문가/NCC+의/PCA  
                                        (NP 전문가/NCC+의/PCA  
                                            (NP 전문가/NCC+의/PCA  
                                                (NP 전문가/NCC+의/PCA  
                                                    (NP 전문가/NCC+의/PCA  
                                                        (NP 전문가/NCC+의/PCA  
                                                            (NP 전문가/NCC+의/PCA  
                                                                (NP 전문가/NCC+의/PCA  
                                                                    (NP 전문가/NCC+의/PCA  
                                                                        (NP 전문가/NCC+의/PCA  
                                                                            (NP 전문가/NCC+의/PCA  
                                                                                (NP 전문가/NCC+의/PCA  
                                                                                    (NP 전문가/NCC+의/PCA  
                                                                                        (NP 전문가/NCC+의/PCA  
                                                                                            (NP 전문가/NCC+의/PCA  
                                                                                                (NP 전문가/NCC+의/PCA  
                                                                                                  (VP (ADVP 땅/ADV)  
                                                                                                    (NP-ADV 이와/NC+의/PCA)  
                                                                                                        (S (NP-SBJ +pro*)  
                                                                                                            (VP (NP-OBJ (S (WHNP-1 *op*)  
                                                                                                                (S (NP-SBJ *T*-1)
```

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(VP (VV 박격포/NNC+먹/NSV+는/EAN)))
(NP 직/NNC+을/PCA))
(VV 조각/NNC+먹/NSV+은/EAN)))
(NP 박격포/NNC+는/PAU))
(VP (NP-OBJ먹/PCA)
박격포/NNC+을/PCA)
(VV 사용/NNC+먹/NSV+는/EAN)))
/ SFN)

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 ‘또한’ 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 믿/NPN+ /)/PCA)
(VP (VP (NP-OBJ *T*-1)
장/NV+는/EAN))
(NP 직/NNC+ /)/PCA))
(ADJP (VJ 부정확/NNC+먹/NSJ+먹/EC))
(S (NP-SBJ (S (NP-SBJ *pro*)
(VP (NP-OBJ 익/DAN 직/NNC+을/PCA)
철/NV+은/EAN))
(NP /)/NNX))
(ADJP 없/VJ+있/EF))
./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 박격포 연대가 있더니 가지 또는 분명히 않았다.

(S (NP-OBJ-1 (S (NP-SBJ 1/NNU
박격포/NNC
연대/NNC+적/PCA)
(ADJP 없/VJ+있/EF))
(NP /)/NNX+은/EAN))
(S (NP-SBJ 적/NPN+은/PAU)

60
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 사탕은 네가 잘 알지.

(S (NP-OBJ-1 그/DAN  
  사탕/NNC+은/PAU)  
(S (NP-SBJ 네/NPN+이/PCA)  
  (VP (NP-OBJ 사탕/NNC+을/PCA)  
    (VP (ADVP 잘/ADV)  
     알/VV+을/EFN)))) 
./SFN)

23 Confusing Examples

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

23.1 ‘필요로 맛있다’

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

철수가 사탕을 더 필요로 한다.

(S (NP-SBJ 철수/NNC+이/PCA)  
  (VP (NP-OBJ 사탕/NNC+을/PCA)  
    (VP ADVP 더/ADV)  
     필요로/NNC+을/PAU)  
  (LV 맛있다/EFN)))) 
./SFN)

23.2 ‘-뿐만 아니라’

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

박격포 동에는 적을 소멸할 뿐만 아니라 전투적격을 초명약기로 하지.

(S (NP-SBJ 박격포/NNC 동/NNC+은/PAU)  
  (VP (VP (S (NP-SBJ (S (NP-SBJ *pro*)  
    (VP (NP-OBJ 적/NNC+을/PCA)  
  (VV 소멸/NNC+의/XSJ+에서/EAN))))

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The NP with the postposition ‘-복에’ 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 ‘계절이 봄이 되다.’ However, in some cases it is treated as an intransitive verb, having only a subject as in ‘밥이 먹다.’

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/ XSV+ 고/EFN))
(NP 예정/NNC+의/CO+ 둡/EFN))

/\SFN/}

통신소는 언제 승격할 계획이었는가?

(S (NP-SBJ *pro*)
 (VP (NP (S (NP-SBJ *pro*)
 (VP (NP-OBJ 통신소/NNC+ 는/PAU)
 (VP (NP-ADV 언제/NNP)
 (VP (VV 승격/NNC+의/ XSV+ 고/EFN))))
 (NP 계획/NNC+의/CO+ 둡/EPF+ 는/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 동안이지요.

(S (NP-ADV (NP (NP 6/NNU 싸/NNX+에서/PAJ)
 (NP 6/NNU 싸/NNX+에서/PAJ 30/NNU 본/NNX))
 (NP 싸/NNC+에서/PAJ))

, /\SCM/

(ADCP 측/ADC)
(S (NP-SBJ *pro*)
 (VP (NP (S (NP-SBJ 대대/NNC+의/PCA)
 (VP (NP-OBJ 공격/NNC 공격/NNC 상/NNC 상/NNC+을/PCA)
 (VV+ 는/EFN))))
 (NP 동안/NNX+의/CO+의/요/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, ‘역기에서부터 타’ 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.

역기에서부터 타 문제이다.

(S (NP-SBJ 역/NNP+에서/PAJ부터/PAJ+의/PCA)
 (VP (NP 문제/NNC+의/CO+의/EFN))

/\SFN/}

63
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 집까지 가 문제이다.

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

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

NP-에서 NP-토
NP-에서 NP-까지
NP-부터 NP-까지
NP-부터 NP-토
NP-에서 NP-에도의
NP-에서 NP-에의

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.

철수가 학교에서부터 집까지 떠있었다.

(S (NP-SBJ 철수/NPR+가/PCA)
  (VP (NP-ADV 학교/NNC+에서 부터/PAD)
    (NP-ADV 집/NNC+까지/PAD))
  (VP 떠/VV+였/EPF+다/EFN))
./SFN)

23.9 Fragments

NP fragments do not have function tags.

"악마" 타나?

(S (NP "악마"/ADV+타나/PAD)
23.10 Coordination of a noun and a Sino-Korean verb with ‘약’
Treat examples such as ‘자위 통솔 약다’ or ‘측각 피과한다’ as VV-level coordination.

전근을 자위 통솔한다.

(S (NP-SBJ *pro*)
  (VP (NP-OBJ 전/DAN
       근/NNC+을/PCA)
   (VV (VV 지위/NNC)
        (VV 통솔/NNC+약/XSV+ㄴ/EFN))))
./SFN)

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

대테금 예시는 기술도 시간도 없고 예시 대규모의 축산작업은 할 수가 없어요.

(S (NP-ADV 대테금/NNC+급/NNX+예시/PAID+는/PAU)
 (S (NP-SBJ (NP 기술/NNC+도/PAU)
         (NP 시간/NNC+도/PAU)))
  (VP (ADJP 없/VV+고/ECS)
       약/VX+이/EFN/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 약/VV+을/EAN))))
   (NP 수/NNX+개/PCA))
  (ADJP 없/VV+지/EFN))
./SFN)

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

너는 목숨이 살만 돼는 것만 해도 닥 الكلام.

(S (S (NP-SBJ 너/NPN+는/PAU)
   (VP (NP-OBJ (S (NP-SBJ *pro*)
                  (VP (NP-COMP 목숨/NNC+의/PCA)
       (VP (NP-COMP 목숨/NNC+의/PCA)

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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, 불규칙한 물론으로 사회 안전원도 제외됩니다.

(S (INTJ 예/IJ)
 ,/SCM
 (S (S (NP-SBJ 불규칙/NNC+는/PAU)
 (VP (NP 물론/NNC+의/CO+를/ECS)))
 (S (NP-SBJ 사회/NNC 안전원/NNC+의/PAU)
 (VP (VV 제외/NNC+의/YSV+를/니/NA/EFN)))))
 ./SFN)

23.14 ‘작기 스스로’

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

경상작는 작기 스스로 치료하는 경우가 많지요.

(S (NP-SBJ (S (NP-SBJ 경상작/NNC+는/PAU)
 (VP (ADVP (NP-COMP 작기/NPN)
 스스로/ADV)
 (VP (NP-OBJ *pro*)
 (VV 치료/NNC+의/YSV+를/PAB+니/NA/EFN)))
 (NP 경우/NNC+의/PCA))
 (ADJP 맛/VJ+있는/EFN)
 ./SFN)

23.15 ‘얼막나 퇴탁’

‘퇴탁’ in ‘얼막나 퇴탁’ is a verb requiring a degree argument. It is the same kind of verb as in ‘무전기의 주막수 범위는 3km+ 되는가.’ In ‘얼막나 퇴탁’, there is no NP for degree argument, and instead the adverb ‘얼막나’ seems to assume this role. In such sentences, simply adjoin ‘얼막나’ to the verb, just like any other adverbs.

R-106 무전기의 주막수 범위는 얼막나 되는가?
대태 방어 지역의 중심은 보통 일막나는가?

(S (NP-SBJ (NP 대태/NNC 방어/NNC 지역/NNC+의/PCA) 
  (NP 중심/NNC+은/PAU))
  (VP (ADVP 일막나/ADV)
    (VP 되/VV+는/EFN))
  ?/SFN)
A Summary of the Penn Korean Treebank Part-of-Speech Tagset

A.1 Content Tags

<table>
<thead>
<tr>
<th>Category</th>
<th>Tag Description</th>
<th>Tag Label</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>noun</td>
<td>proper noun</td>
<td>NPR</td>
<td>한국 (Korea), 클린턴 (Clinton)</td>
</tr>
<tr>
<td>common noun</td>
<td>NNC</td>
<td></td>
<td>한국 공학교, 컴퓨터 (computer)</td>
</tr>
<tr>
<td>dependent noun</td>
<td>NNX</td>
<td></td>
<td>일 (thing), 등 (etc), 년 (year), 달러 (dollar), 적 (situation)</td>
</tr>
<tr>
<td>pronoun, demonstrative</td>
<td>NPN</td>
<td></td>
<td>는 (he), 이/의 (this), 무엇 (what)</td>
</tr>
<tr>
<td>ordinal, cardinal, numeral</td>
<td>NNU</td>
<td></td>
<td>하나 (one), 첫째 (first), 1, 세 (three)</td>
</tr>
<tr>
<td>words written in foreign characters</td>
<td>NFW</td>
<td></td>
<td>Clinton, computer</td>
</tr>
<tr>
<td>predicate</td>
<td>verb</td>
<td>VV</td>
<td>가 (go), 먹 (eat)</td>
</tr>
<tr>
<td>adjective</td>
<td>VJ</td>
<td></td>
<td>예쁘 (pretty), 다르 (different)</td>
</tr>
<tr>
<td>auxiliary predicate</td>
<td>VX</td>
<td></td>
<td>있 (present progressive), 애 (must)</td>
</tr>
<tr>
<td>adverb</td>
<td>constituent adverb, clausal adverb</td>
<td>ADV</td>
<td>매우 (very), 조금 (quietly), 점점 (please), 만일 (if)</td>
</tr>
<tr>
<td>conjunctive adverb</td>
<td>ADC</td>
<td></td>
<td>그 리고 (and), 그 밖의 (but, however), 및 (and), 혹은 (or)</td>
</tr>
<tr>
<td>adnominal</td>
<td>configurative, demonstrative</td>
<td>DAN</td>
<td>새 (new), 옛 (old), 이 (that)</td>
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<tr>
<td>interjection</td>
<td>exclamation</td>
<td>IJ</td>
<td>아 (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>
<th>Tag Label</th>
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<tbody>
<tr>
<td>postposition</td>
<td>case</td>
<td>PCA</td>
<td>ㄱ/ㅏ (nominative), 을/를 (accusative), 의 (possessive), 약 (vocative)</td>
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<tr>
<td>adverbial</td>
<td>PAD</td>
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<tr>
<td>conjunctive</td>
<td>PCJ</td>
<td></td>
<td>의/과, 하가 (and)</td>
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<td>auxiliary</td>
<td>PAU</td>
<td></td>
<td>만 (only), 도 (also), 는 (topic), 마다 (even)</td>
</tr>
<tr>
<td>copula</td>
<td>CO</td>
<td></td>
<td>이 (be)</td>
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<td>ending</td>
<td>final</td>
<td>EFN</td>
<td>둔락/ㄴ락 (declarative), 는/ㄴ, 는/있 (interrogative), 역/락 (imperative), 지 (possitive), 구/낙 (exclamatory)</td>
</tr>
<tr>
<td></td>
<td>coordinate, subordinate, adverbial, complementizer</td>
<td>ECS</td>
<td>고 (and), 을/를 (because), 덧 (attaches to adjectives to derive adverbs), 다음과 (that), 라고 (that)</td>
</tr>
<tr>
<td>auxiliary</td>
<td>EAU</td>
<td></td>
<td>약, 까, 지, 고 (on verbs or adjectives that immediately precede auxiliary predicates)</td>
</tr>
<tr>
<td>adnominal</td>
<td>EAN</td>
<td></td>
<td>둔/ㄴ (on main verbs or adjectives in relative clauses or complement clauses of a complex NP)</td>
</tr>
<tr>
<td>nominal</td>
<td>ENM</td>
<td></td>
<td>입/듯 (on nominalized verb)</td>
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<tr>
<td>pre-final ending</td>
<td>EPT</td>
<td></td>
<td>엘 (past), 아/있 (honourific), 아/있 (future)</td>
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<tr>
<td>affix</td>
<td>suffix</td>
<td>XSF</td>
<td>녹, 졸, 적</td>
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<td></td>
<td>prefix</td>
<td>XPF</td>
<td>제, 각, 매</td>
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<td></td>
<td>verbalization suffix</td>
<td>XSV</td>
<td>약, 되, 심/있</td>
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<td></td>
<td>adjectivization suffix</td>
<td>XSJ</td>
<td>스/있, 은/있, 어</td>
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</tbody>
</table>

### A.3 Symbols

<table>
<thead>
<tr>
<th>Category</th>
<th>Tag Description</th>
<th>Tag Label</th>
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