PROIEL Guidelines for Annotation

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Contents

1 Introduction

The system of annotation presented here is based on dependency grammar enriched with secondary dependencies (slashes, see section 14) reminiscent of the structure sharing mechanism in Lexical-Functional Grammar. Much of the scheme is adapted from the *Guidelines for the Syntactic Annotation of Latin Treebanks (v. 1.3)*[1] and its ultimate source, the *Guidelines for Annotations at Analytical Level of the Prague Dependency Treebank.*[2] However, there are several important differences that will be adressed in a separate document which also discusses questions of conversion.

Since we use a dependency grammar, word order is not modelled at all in our syntactic trees. The information about word order is rather stored in a separate layer where each word is given a linearisation index corresponding to its position in the sentence. This means that there is no left-to-right ordering in our trees. In this document, the ordering often but not always approximates the linear order of the sentence. In the annotation interface, the left-to-right ordering of trees is decided by the dependency tree grapher and is purely conventional. If an annotation is changed in some minor way, this may result in the dependency grapher deciding to change the graphical representation of the analysis tree. **Word order**

This also means that annotators can work in the sequence they prefer. Dependents of the same node can be added in any order: it is not necessary to add the subject, the object and other arguments in any particular order.

2 The idea of dependency grammar

Dependency grammar sets out to model the syntactic structure of sentences as a set of *relations* between words. These relations are called *dependencies*. It is notoriously hard to define a syntactic dependency, but as a basis for an intuitive grasp of the concept, a word X is dependent on a word Y just in case, if you remove Y from the sentence, you also have to remove X.

These relations must be *antisymmetric*, which is why they are referred to as dependencies: if X depends Y, Y cannot depend on X. Sometimes it would be tempting to analyse words as mutually dependent. For example, it is the case in many languages that a preposition cannot occur without its complement; nor can the complement occur without the preposition. Most dependency grammarians do not tolerate such mutual dependencies however.

3 Sentence boundaries

The division of the text into sentences has been done automatically. It is based on the punctuation used in the source text, which does not always correspond to meaningful syntactic units. In the case of the Latin Vulgate, the source text

---

[1]http://nlp.perseus.tufts.edu/syntax/treebank/1.3/docs/guidelines.pdf
[2]http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/a-layer/html/index.html

had no punctuation at all, so we have 'imported' punctuation from another, slightly different text (the Clementine Vulgate). This means that there is even more potential for errors.

The interface therefore allows for changes in the sentence boundaries through the use of the two buttons in the sentence division field. 'Merge with next' will merge the sentence with the next sentence; 'edit' will open a box which allows the annotator to split the sentence in two by inserting a |(pipe character) into the xml-presentation of the sentence. Care should be taken not to split the sentence inside an XML element; normally, a new sentence should start right after a space (<s> </s>).

Grouping of main clauses

Whether two main sentences with καί, *et*, ı or a similar conjunction between them have been conjoined or not depends on the punctuation used by the editor. The annotators should in general not change this, but only verify

- that there are no 'off-by-one' errors, ie. cases where the sentence boundary is wrong by a couple of words. This can happen if there are important textual deviations between the Clementine Vulgate and our text. Also, subjunctions like *quia* are often placed together with direct speech ('mixed speech'), but should belong with the verb of saying.

- that the sentence does not contain two main clauses which are not conjoined by a conjunction. In general we prefer to split such sentences instead of coordinating two main clauses using a null conjunction.

- that there are no subordinate clauses which have been assigned to the wrong governing main clause

'Mixed' speech

Notice that the most frequent off-by-one-error occurs when a subjunction like *quia* is put in the same sentence as direct speech. In such cases, the subjunction should be dependent on the verb of speech (normally via the relation COMP), but not itself have any dependent, because the direct speech is marked off as a separate sentence. Notice that sentences introduced by subjunctions should be considered indirect speech if this is possible, ie. if there is no evidence from e.g. pronouns (first or second person pronouns if the subject of the verb of saying is in the third person) or other deictic elements to indicate that the quote is direct.

Direct and indirect speech

Indirect speech should depend on, and be grouped with, the sentence containing the verb of speech. Direct speech should be separated off as main clauses. If a sentence contains both a verb of saying and some direct speech, it is possible to analyse this as two separate sentences, see the next section.

Parenthetical sentences

There are cases where one main clause is entirely included in another main clause as a parenthetical sentence. Since we consider direct speech as main clauses, this is the case whenever a verb of speech is inserted parenthetically into a sequence of direct speech, as in the following example (Acts 25.5):

οἱ οὖν ἐν ὑμῖν, φησίν, δυνατοὶ συνκαταβάντες εἴ τί ἐστιν ἐν τῷ ἀνδρὶ ἄτο-
πον κατηγορείτωσαν αὐτοῦ.

Qui ergo in vobis, ait, potentes sunt, descendentes simul, si quod est in viro crimen, accusent eum.

This should be split into two sentences, a PRED and a PARPRED. Disregarding the internal structure of the main clause, the analysis will look the following way:

(1)

```
                          Root
                 _____/    _____
              PRED                    PARPRED
            accusent                    ait
        ____/_____
   qui ergo in vobis potentes sunt descententes
   simul si quod est in viro crimen eum
```
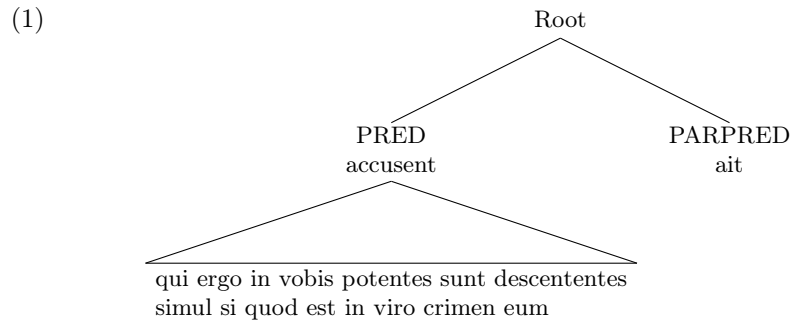
Conversely, when direct speech is wedged into another main clause, as сьде хь is in the following example, the direct speech is analysed as a PARPRED:

(2)

```
                              Root
                     _____/    _____
                  PRED              VOC PARPRED
                 имѣте              /        \
            ___/  |   \___        се          0
         AUX  OBJ    ADV                    /    \
          не  вѣры    аште              SUB    XOBJ
                       |                 хь ◄······ сьде
                     PRED
                   речетъ
                   /    \
                SUB     OBL
               къто    вамъ
```
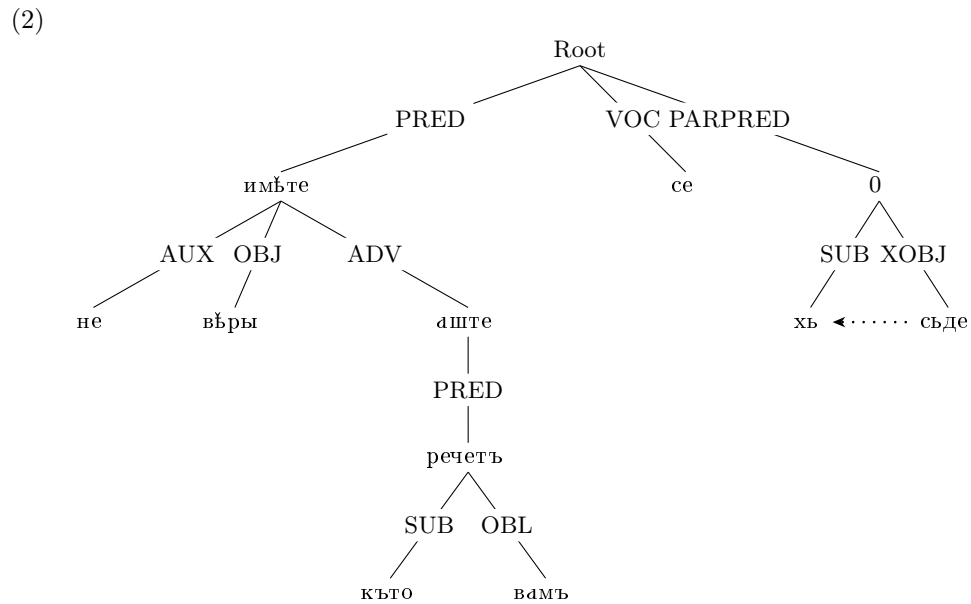
аште речетъ къто вамъ се сьде хь. не имѣте вѣры
'If someone tells you 'Christ is here', do not believe him.'

But there are also longer parenthetical sentences, especially in Paul. For the purpose of the sentence boundaries, the whole should be treated as one sentence. In analysing the syntactic dependencies, the verb of the parenthetical sentence should be made dependent directly on the sentence root (and not on the main clause) via the relation PARPRED (parenthetical predication).

Notice that only PRED, PARPRED and VOC relations are allowed directly under the root.

4   Tokenization

The words to be analyzed and represented in the dependency tree do not always match those in the text. Sometimes elements which need to be treated as separate tokens in the syntactic model are run together in the text. This is the case with *krasis* in Greek, and with enclitic *-que* in Latin. The conjunction cum negation *neque* has also been split into a conjunction part *que* and a negation part *ne*. When the meaning is 'not even' we do not split it.   **Clitics, krasis**

5   The verb

The verb is the central element of every predication. We model this by taking the verb to be the head of all other elements in its sentence (except subjunctions, see section 10.2). We also let the verb "stand in" for the sentence as a whole, which means that it is annotated with the function of the whole sentence (unless, again, a subjunction is present). This structure is apparent in example 1: although the internal structure of the main clause is not shown in the figure, we see that the main verb dominates all the other elements of its sentence.

Main clauses do not have a function within some larger sentence, therefore their verbs are attached to the root via the relation PREDication: **Main clauses**

(3)
```
              Root
               |
             PRED
             dico
            /    \
         Aux      OBL
        enim     vobis
```
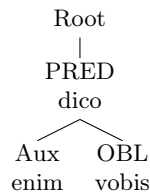
Dico enim vobis

In subordinate clauses introduced by a subjunction, the subjunction is assigned the relation which corresponds to the function of the clause, and the verb is attached to the subjunction via the relation PRED: **Subordinate clauses**

(4)
```
                    Root
                     |
                   PRED
                   dicite
                     |
                   COMP
                   quia
                     |
                   PRED
                    est
                     |
                   XOBJ
                 necessarius
                     |
                   OBL
                  Domino
```
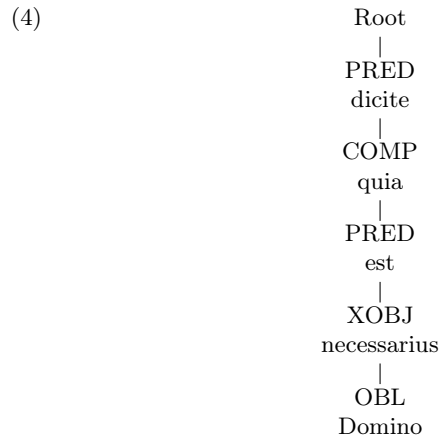
Dicite quia Domino necessarius est

For more on subordinate clauses with subjunctions, see section 10.2. Sometimes the subjunction is missing even in sentences where we would expect one, see section 10.3.

In other contexts (relative clauses, accusative with infinitives, absolute constructions, dominant participles, conjunct participles and governed infinitives), verbs will be annotated with the function of the whole construction, see section 10. This means that a verb should always be present: if it is not in the text, it will have to be inserted, see section 12.

Other embedded predications

Auxiliary verbs are attached to the main verb via the relation Aux:

Auxiliary verbs

(5)
```
                    Root
                     |
                   PRED
                   dictum
                   ⁄    ＼
                Aux      OBL
                est     uobis
```
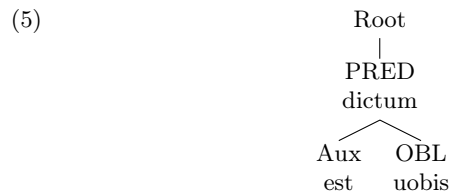
Dictum est vobis

Since we only allow PRED, PARPRED and VOC under the root, it is necessary to supply an empty verb whenever none is present. For example, when Jesus asks the disciples how many baskets of bread they distributed, the disciples answer 'seven':

Non-verbal predication

(6)
```
                    Root
                     |
                   PRED
                     0
                     |
                   OBJ
                  septem
```

On the other hand, there are cases where a participle is coordinated with a finite verb. Since we annotate syntactic function, and not form, these are treated as PREDs, corresponding to their function:

(7)

```
                        Root
                         |
                        PRED
                        καί
              _____
             |                    |
            PRED                 PRED
       προσεφώνησεν          ἐκλεξάμενος
             |               _____
            OBJ             OBL        OBJ
          μαθητάς           ἀπ’       δώδεκα
        _____              |
       |       |            OBL
      Aux     ATR          αὐτῶν
      τούς    αὐτοῦ
```
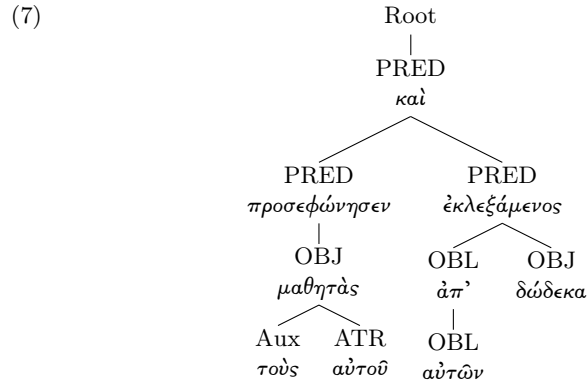
προσεφώνησεν τούς μαθητάς αὐτοῦ, καί ἐκλεξάμενος ἀπ’ αὐτῶν δώδεκα

6   Exclamations

We use the relation VOC for all kinds of exclamations. These are placed directly under the root, as they are external to the sentence. In the syntactic annotation we annotate function and not form, so this relation is not only used for vocative nouns, but also for nominative and accusative exclamations as well as for different interjections etc.

Vocatives, interjections

(8)

```
                    Root
           _____
          |                       |
         VOC                     PRED
       Catilina                 habemus
                                   |
                                  OBJ
                               consultum
                    _____
                   |              |                 |
                  ATR            ATR              APOS
                senatus           in               et
                                  |             _____
                                 OBL           |          |
                                 te          APOS       APOS
                                           vehemens     grave
```
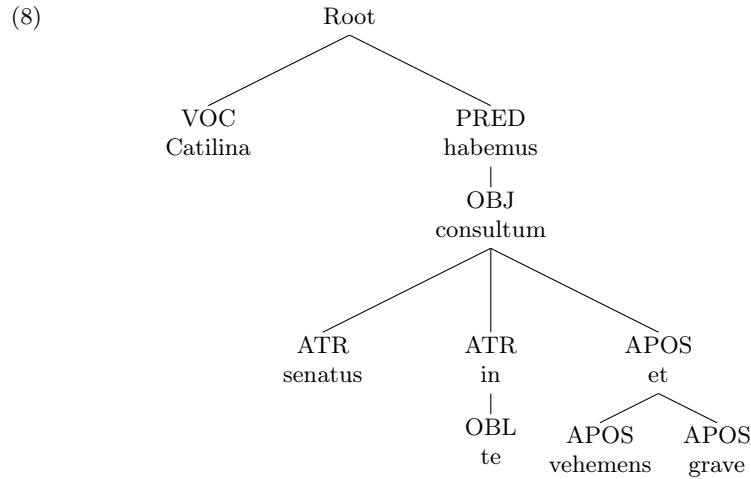
Habemus senatus consultum in te, Catilina, vehemens et grave

(9)
```
              Root
             /    \
          VOC     PRED
          amen    dico
                    |
                   OBL
                  vobis
```

Amen, dico vobis
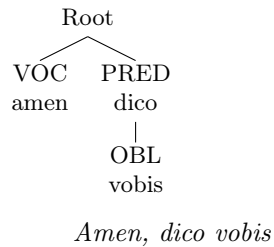
Some sentences consist of only an exclamation. In such cases there is no need to introduce an empty PRED-node:

(10)
```
        Root
          |
         VOC
        osanna
          |
         ADV
          in
          |
         OBL
       excelsis
```

Osanna in excelsis
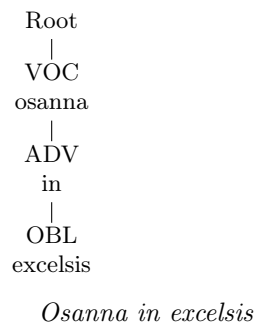
Notice in particular that *ecce*, *ἰδού*, and ce belong here. In many cases, these are used in presentation constructions, which should then be analysed as involving an empty PRED 10474:

(11)
```
              Root
             /    \
          VOC     PRED
          ecce      0
                    |
                   SUB
                    et
                   /  \
               SUB     SUB
             fratres   mater
                |        |
               ATR      ATR
               mei      mea
```

ecce mater mea et fratres mei
'Behold my mother and my brethren'
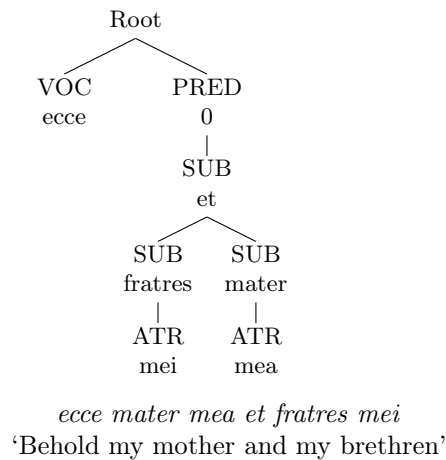
7 Non-verbal sentence-level grammatical relations

In this section we describe sentence-level grammatical relations, ie. relations that have a verbal node as a head. These are SUBject, OBJect, OBLique, AGent, XOBJ (predicative complement) and ADVerbial, as well as some supertags described in section 7.8

11

7.1 Subject

In the typical case, SUB relates a nominative noun to its verb:

(12)
```
                    Root
                     |
                   PRED
                  expellit
        ┌───────┬────┴────┬────────┐
      ADV      SUB       OBJ       OBL
     statim  Spiritus    eum       in
                                    |
                                   OBL
                                 desertum
```
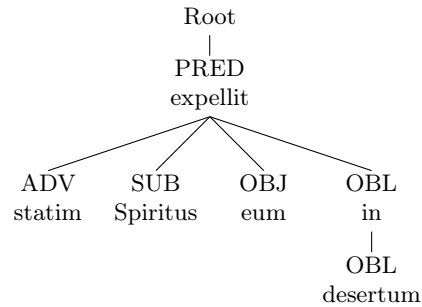
statim Spiritus expellit eum in desertum

But on some occasions, we also find partitive expressions (genitive nouns and prepositional phrases) which are subjects and must be given the relation SUB: **Partitive subjects**

(13)
```
              Root
               |
             PRED
           dixerunt
         ┌─────┴─────┐
       SUB          OBL
        ex           ad
        |            |
       OBL          OBL
    discipulis    invicem
        |
       ATR
       eius
```
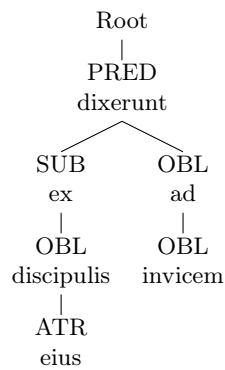
ex discipulis eius dixerunt ad invicem

(14)
```
                    Root
                     |
                   PRED
                    бѣ
        ┌───────┬────┴────┬────────┐
      Aux      OBL       SUB       ADV
      не       има      мѣста      въ
                                    |
                                   OBL
                                 обитѣли
```
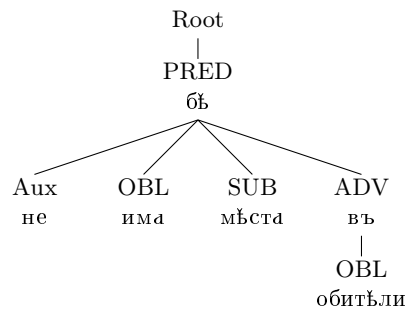
не бѣ има мѣста въ обитѣли (Luke 2:7)

Note that more generally, preposition phrases can serve as subjects in Greek when they are nominalised by the article:

(15)

```
                    Root
                      |
                    PRED
                   ἐξῆλθον
                      |
                    SUB
                    παρ᾽
                   /    \
               OBL      Aux
              αὐτοῦ      οἱ
```

οἱ παρ᾽ αὐτοῦ ἐξῆλθον
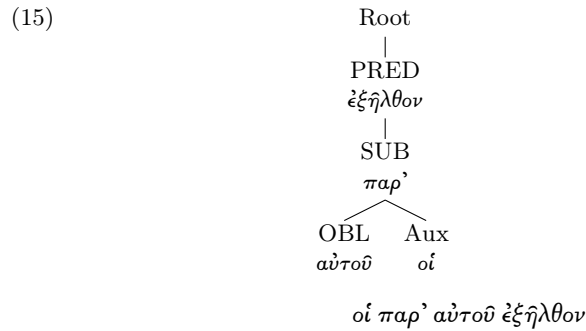
Note that (non-articular) infinitives are never subjects, but rather COMPs or XOBJs, see section 15.11.

Subjects can also be nouns in oblique cases in an absolute construction, see section 10.7.

Subjects in absolute constructions

7.2 Object

In the typical case, OBJ relates an accusative noun to the verb:

(16)

```
                         Root
                          |
                        PRED
                       intravit
              /        |          |        \
           Aux       ADV        OBJ        ADV
           et       iterum   Caphernaum    post
                                            |
                                           OBL
                                           dies
```

iterum intravit Capharnaum post dies
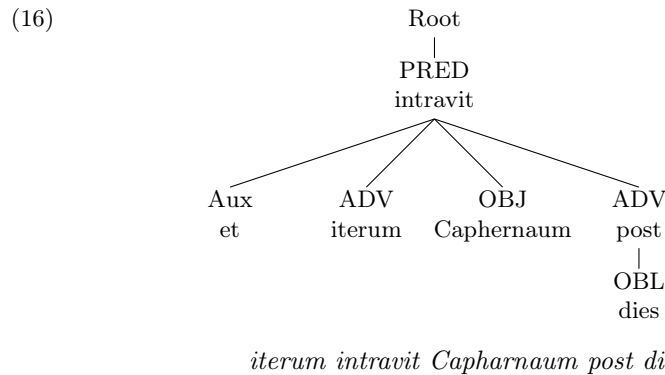
OCS genitive-formed accusative objects should of course also be analysed as OBJ, not OBL. In some cases there may be doubt whether the verb requires a genitive or an accusative, or may occur with either. In such cases the supertag ARG should be used, see section 7.8.

As with subjects, we sometimes find partitive expressions which are objects. They are given the relation OBJ:

Partitive objects

(17)

```
              Root
               |
             PRED
            afficient
            /      \
         OBL       OBJ
        morte       ex
                     |
                    OBL
                   vobis
```

13
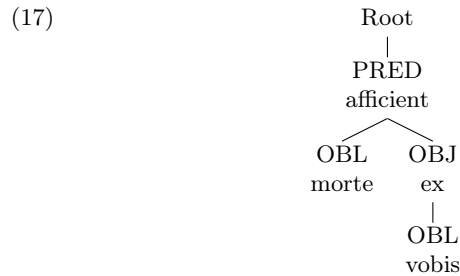
Partitive objects raise a problem which does not occur with partitive subjects, since they must be distinguished from normal governed genitives as we find, f.ex. with *meminisse*. The relation OBJ should only be assigned if an accusative could be substituted. If in doubt, consult section 7.8. In OCS, it can be hard to distinguish partitive genitive objects (OBJs) from genitive objects required by the verb (OBLs). If in doubt, use the supertag ARG.

In OCS, negated objects regularly occur in the genitive. They should be analysed as OBJs. Again, if there is doubt whether the verb requires the accusative or the genitive, use the supertag ARG.

(18)

```
                    Root
                     |
                   PRED
                   вѣсте
             _____/  _____
            /       |        \
          SUB      Aux       OBJ
          вы        не      ничесоже
```

вы не вѣсте ничесоже (John 11:49)
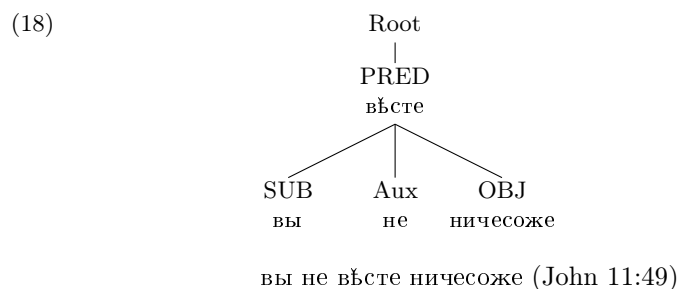
Notice also that the OCS supine demands genitive objects. If the verb requires an accusative object in other forms, the genitive object of the supine should still be an OBJ. If there is doubt whether the verb requires the accusative or the genitive, the supertag ARG should again be used.

Some verbs, like *docere*, take two accusatives. In such cases, annotators should first check if both accusatives qualifies as arguments (see section 16.1). If they do, it is possible to take both accusatives as OBJects, but this should only be done if both accusatives could become subjects in a passive construction. If only one of the accusatives can be the subject in a passive construction, the other accusative must become an OBL (or an ADV, if it does not qualify for argumenthood). Very often, it is not possible to determine whether a given accusative can become the subject in the passive or not; in such cases, annotators should assume that they can be, and annotate them as object. Thus the 'default case' is that two accusative arguments of a verb should both be treated as OBJects.

Double accusatives

Note that (non-articular) infinitives are never subjects, but rather COMPs, see section 15.11.

7.3 Obliques

We use the relation OBLique to attach those arguments of the verb which are not subjects or objects to the clausal node. By *argument* we mean any syntactic element seen as required by a verb. This could be a genitive, as with *meminisse*; a dative, as with *sucurrere*; an ablative, as with *uti*; a prepositional phrase, as with *pertinere* and in general with motion verbs; and even an adverb, as with

tractare. It is not always clear whether a noun phrase is an oblique argument or not; or whether a genitive is a partitive object or an oblique argument. If in doubt consult section 7.8. Oblique arguments include non-accusative 'objects' as well as prepostional arguments.

Indirect objects

(19)
```
                    Root
                     |
                   PRED
                   dixit
              ╱      |      ╲
           Aux     OBL      SUB
           et      mihi    angelus
```

et dixit mihi angelus
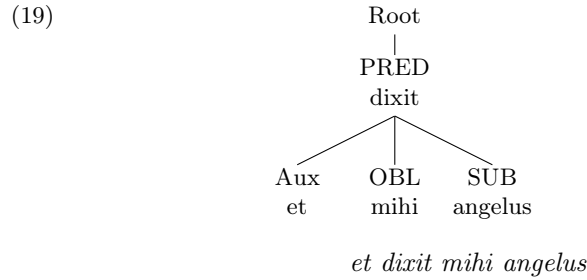
We include all directional expressions here (goal and source) here when they are used with motion verbs. This goes both for prepositions and adverbs, so e.g. *huc* should very often be an OBL. Other prepositions that are necessary to the meaning of the verb, such as in e.g. *pertinere ad*, also belong here:

Prepositional arguments

(20)
```
                  Root
                   |
                 PRED
                introibo
             ╱        ╲
          Aux         OBL
          et           ad
                        |
                       OBL
                       eum
```

et introibo ad eum
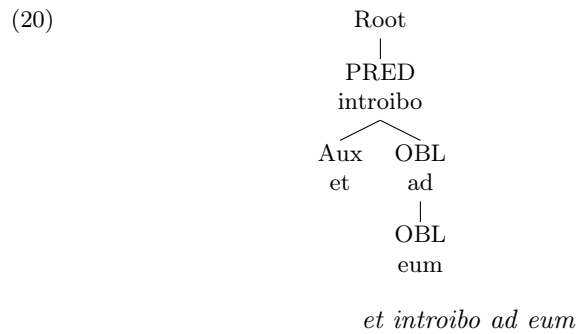
Path expressions, on the other hand, are normally not oblique arguments, but rather adjuncts. Exceptions occur, however, for example in cases where the path argument is 'required' by a preverb.

A restricted group of adjectives such as *similis, dissimilis* also take complement nouns. We relate these nouns to their adjectives via the relation OBL:

Arguments of adjectives

(21)
```
                  Root
                   |
                 PRED
                 erat
             ╱        ╲
          SUB        XOBJ
          iris       similis
                      |
                     OBL
                    visioni
                      |
                     ATR
                  zmaragdinae
```

15
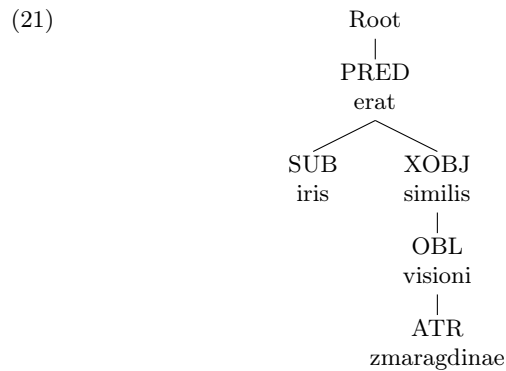
iris erat similis visioni zmaragdinae

As the last example illustrates, the complement of the preposition is also considered an oblique argument (of the preposition), no matter the function of the phrase as a whole:

Objects of prepositions

(22)
```
            Root
             |
           PRED
          cenabo
             |
           ADV
           cum
             |
           OBL
           illo
```

cenabo cum illo
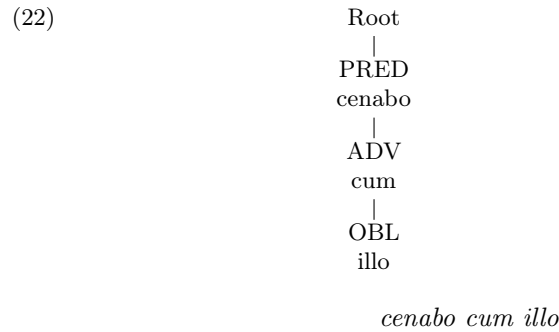
7.4   Agents in passive constructions

In passive constructions, and some rare active ones, we use the relation AG to relate a non-nominative agent to the verb. A typical example is:

PPs as agents

(23)
```
                Root
                 |
               PRED
             obicuntur
           ╱     |     ╲
        SUB    OBL    AG
       quae    tibi    ab
                        |
                       OBL
                       his
```

quae tibi obicuntur ab his

(24)
```
                Root
                 |
               PRED
              кръсти
             ╱      ╲
          Aux       AG
          са        отъ
                     |
                    OBL
                   иодна
```

кръсти са отъ иодна (Mark 1:9)
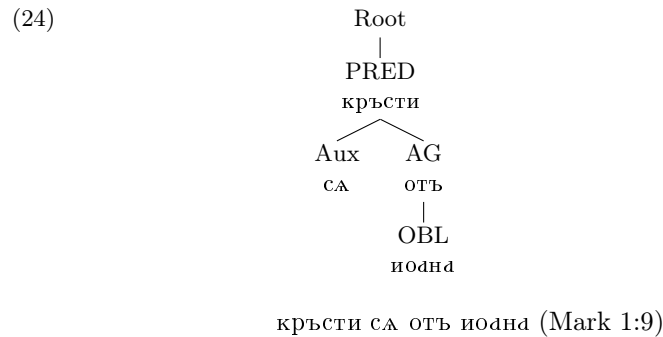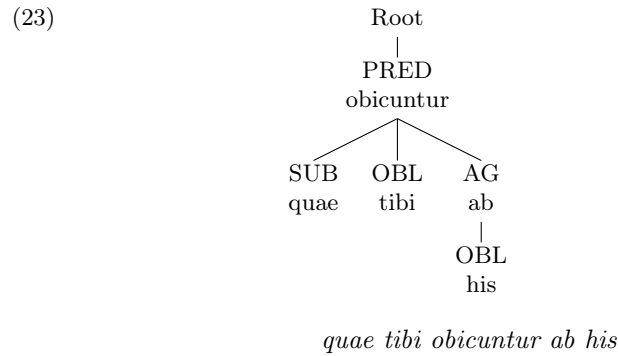
   The same relation AGent is used whenever the agent is expressed by a pure case form rather than a prepositional construction:

Pure case forms

(25)

```
                          Root
                 _____|_____
                VOC              PRED
                ἰδοὺ          πεπραγμένον
                        _____|____|_____
                       Aux    SUB    Aux    AG
                       καὶ    οὐδὲν  ἐστὶν  αὐτῷ
                               |
                              ATR
                              ἄξιον
                               |
                              OBL
                             θανάτου
```
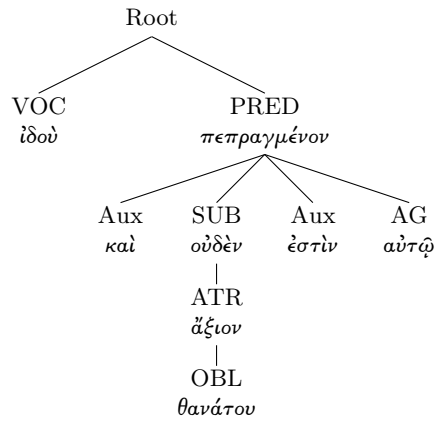
ἰδοὺ οὐδὲν ἄξιον θανάτου ἐστὶν πεπραγμένον αὐτῷ

The AG tag is ordinarily used to express the agent with a passive verb. In Greek, however, some intransitives are regularly used instead of the expected passive form of a verb. Verbs occurring with this construction include *πάσχω, πίπτω, φεύγω, εὖ*■*κακῶς ἀκούω, ἀποθνήσκω.*

(26)

```
                        root
                         |
                        PRED
                         |
                        μέλλει
              _____|_____
             ADV  AUX   SUB         XOBJ
            οὕτως καὶ   υἱὸς        πάσχειν
                      __|__          |
                    AUX   ATR        AG
                     ὁ  ἀνθρώπου     ὑπ'
                            |         |
                           AUX       OBL
                           τοῦ       αὐτῶν
```

(27)

```
                    παθοῦσα
                 _____|_____
                ADV          AG
               πολλὰ         ὑπὸ
                              |
                             OBL
                            ἰατρῶν
                              |
                             ATR
                            πολλῶν
```
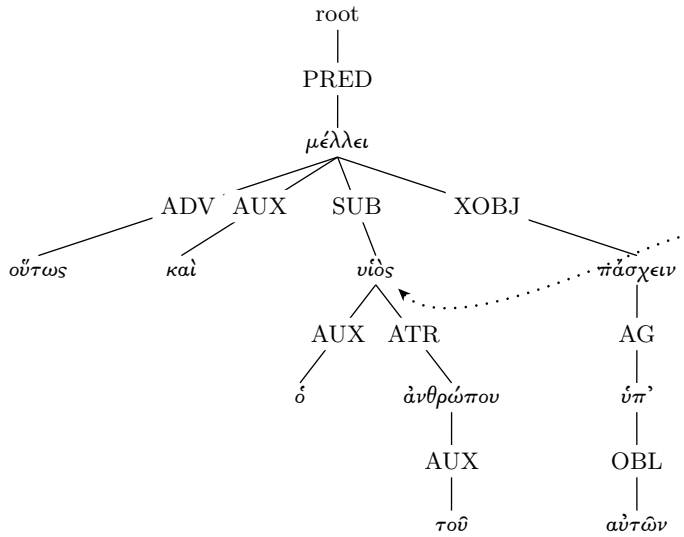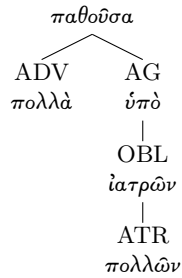
Since these verbs are functionally equivalent to passives and have supplanted the passive verbs forms (although the passive of e.g. ἀποθνήσκω does also occur in the NT), we allow for prepositional phrases with ὑπὸ to be marked as AG. Note, however, that this is only allowed with a restricted set of verbs and is most often found in Greek. There are some examples, e.g. исцѣлѣти in 40449.

Note finally that infinitives in Gothic are ambiguous with regard to diathesis, so that what looks like (and is tagged as) an active infinitive can take an agent expresssion and have passive meaning.

7.5 Adverbials

We use the relation ADVerbial to attach adverbial expressions to the sentence. Such expressions can take various forms: adverbs, preposition phrases, nouns (in oblique cases), participles and gerunds. In some cases, it is not clear whether they are adverbials or oblique arguments, and in that case, sections 7.8 and 16.1 should be consulted: **Adverbs**

(28)
```
            Root
             |
           PRED
         epulabatur
          /      \
       ADV        ADV
      cotidie    splendide
```

epulabatur cotidie splendide

Preposition phrases

(29)
```
                Root
                 |
               PRED
             moechatus
          /    |    |    \
       ADV   Aux  OBJ   ADV
       iam   est  eam    in
                          |
                         OBL
                        corde
                          |
                         ATR
                         suo
```

iam moechatus est eam in corde suo

Noun in oblique case

18

(30)

```
                        Root
                         |
                        PRED
                        dicunt
          ┌──────────────┼──────────────┐
        Aux            ADV            OBL            SUB
        et             die            ei          discipuli
                    ┌────┴────┐
                  ATR       ATR
                 primo    azymorum
```
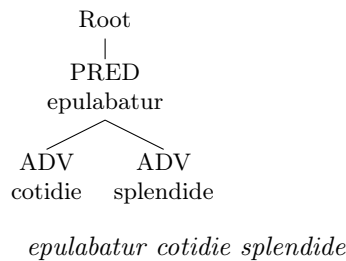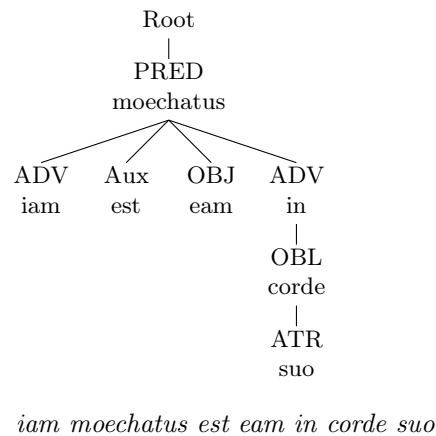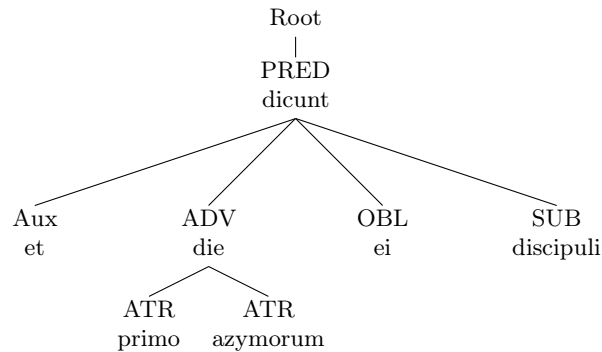
Et primo die azymorum dicunt ei discipuli

We also consider predicative/conjunct participles and adjectives (see sections 16.3 and 10.9.2), as well as gerunds, to be adverbial, but they special because they are cases of embedded predications with their own argument structure. Moreover, they are special in that they cannot take a subject dependent. They are further described in section 10.9. In the nominal domain, we do not try to separate predicative nouns from appositions, see section 9.3.

Adverbial accusatives are also ADVs and annotators should beware that **Adverbial** *multum, multa*, πολλά and the like are often ADV and not OBJ. **accusative**

The relation ADV is also used for sub-sentence-level modifiers of adjectives, **ADV** prepositions, numerals (see 36579) and other adverbs: **modifying non-verbal elements**
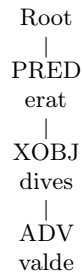
(31)
```
        Root
         |
        PRED
        erat
         |
        XOBJ
        dives
         |
        ADV
        valde
```

erat valde dives

(32)

```
                          Root
                           |
                         PRED
                        factae
            ┌──────────┬──────────┬──────────┐
           Aux        SUB        ADV        ADV
           sunt     tenebrae     per         in
                                  |       ┌───┴───┐
                                 OBL     ADV     OBL
                                terram  usque   horam
                                  |               |
                                 ATR             ATR
                                totam            nonam
```
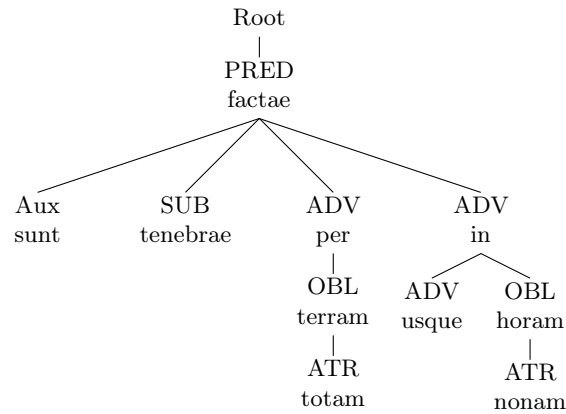
tenebrae factae sunt per totam terram usque in horam nonam

(33)

```
                          Root
                           |
                         PRED
                        veniunt
            ┌──────────┬──────────┬──────────┐
           Aux        ADV        ADV        OBL
            et        mane        una         ad
                       |           |          |
                      ADV         ATR        OBL
                     valde     sabbatorum  monumentum
```
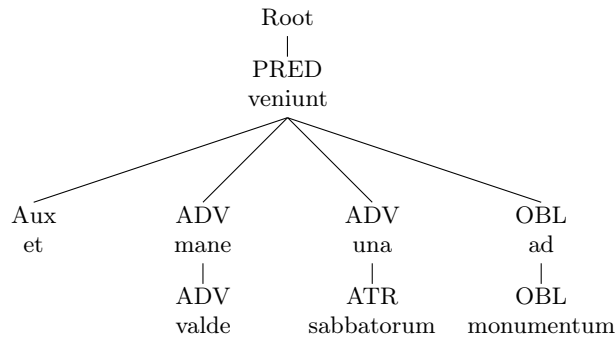
et valde mane una sabbatorum veniunt ad monumentum

7.6   Predicative complements

The relation XOBJ is used for subject and object complements (as well as other functions as explained in section 16.5) which are introduced by verbs like *esse, uideri, appellari, fieri* (subject complements) and *facere, creare* (object complements), as well as in verbless absolute ablatives (see section 10.7). The relation itself does not make clear whether we are dealing with a subject predicative or an object predicative. Instead, we use the slash notation to mark this, see section 14. Note that in OCS, complements can be instrumental-marked. They should still be analysed as XOBJs, not as OBLs. The same goes for complements introduced by a preposition, such as in Gothic *wairþan du*, OCS быти въ.

Note that predicatives can be of many different syntactic categories: adjectives, nouns and preposition phrases are typical examples:

(34)

```
                    Root
                     |
                    PRED
                     |
                    est
                   ╱    ╲
                 SUB    XOBJ
                  |       |
               Cicero ◄······· consul
```

Cicero consul est   **Nominative noun**

(35)

```
                         Root
                          |
                         PRED
                          |
                      creaverunt
                      ╱    |    ╲
                   SUB    OBJ    XOBJ
                    |      |       |
                 Romani  Ciceronem ◄······· consulem
```

Romani Ciceronem consulem creaverunt   **Accusative noun**

(36)

```
                    Root
                     |
                    PRED
                     |
                    erat
                   ╱    ╲
                 SUB    XOBJ
                  |       |
               navis ◄········· in
                          |
                         OBL
                          |
                        mari
                          |
                         ATR
                          |
                       medio
```

navis in medio mari erat   **Preposition phrase**

(37)

```
                    Root
                     |
                   PRED
                     |
                  reddite
                  /      \
               OBJ        OBL
                |           \
              sunt        Caesari
              /    \
           SUB    XOBJ
            |        \
          quae ◄······· Caesaris
```

reddite quae sunt Caesaris Caesari   **Genitive noun**
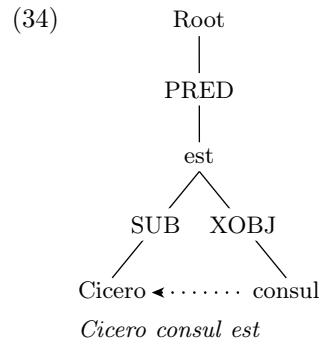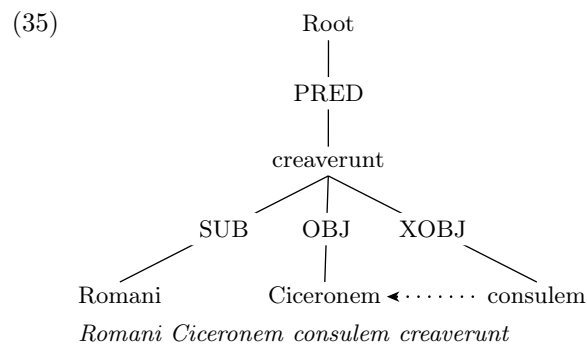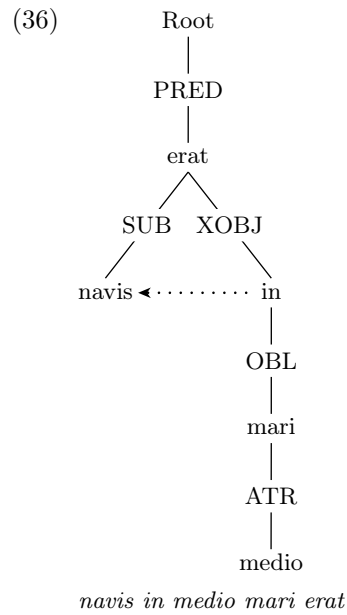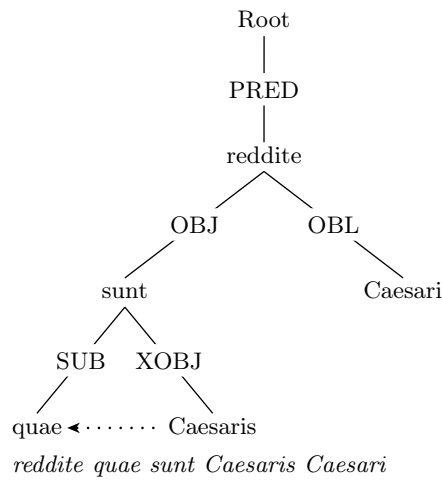
Notice that we also use XOBJ for some 'non-standard' copulas such as Greek ἔχω in constructions such as ἔχω ἑτοίμως 'be ready'.

7.7 Adverbal appositions

Although appositions are normally dependents of sentence constituents, there is at least one case where we use sentence level appositions, namely in the case of 'distributive elaborations', i.e. cases where a predicational structure (normally without a finite verb) containing a distributive element or a list. A classical example is *and all were going to be enrolled, each to his proper city*:

(38)

root
|
PRED
|
ἐπορεύοντο

AUX ˊ SUB   XADV   APOS

καὶ   πάντες   ἀπογράφεσθαι   0

                                SUB   OBL

                              ἕκαστος   εἰς

                                          OBL
                                          |
                                         πόλιν

                                    AUX   ATR
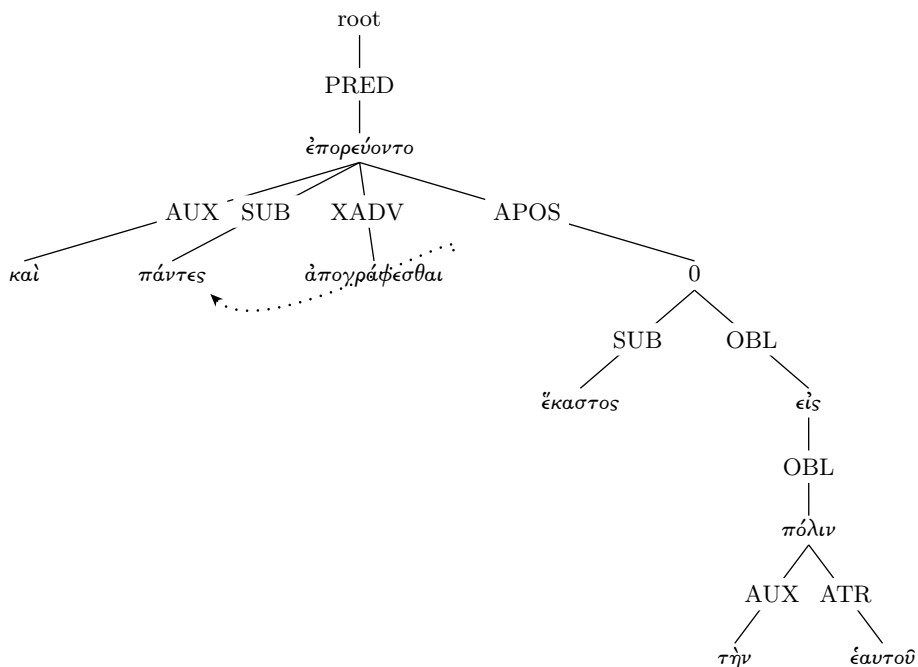
                                    τὴν   ἑαυτοῦ

καὶ ἐπορεύοντο πάντες ἀπογράφεσθαι, ἕκαστος εἰς τὴν ἑαυτοῦ πόλιν.

Since the appositive element is not a constituent, we need to embed the separate elements under an empty verbal node, which is then given the relation APOS to the finite verb.

7.8 Supertags

The distinctions that we attempt to make in our syntactic model are not always crystal clear. Section 16 offers some supplementary advice on the use of some relations. In order to preserve the quality of the data, we also provide certain supertags which the annotators should use when they are in doubt, instead of simply choosing one of the alternatives. These are:

- PER for peripheral (not subject or object) elements, ie. OBL or ADV. This should be used whenever it is not possible to decide whether an element is an argument or an adjunct.

- ARG for arguments, to be used whenever it is not possible to decide whenever an element is an OBJect or an OBLique.

- NONSUB for non-subjects, ie. elements that are either OBJets, OBLiques or ADVerbials[3]

---

[3]This case is extremely rare, of course, but the tag can also be used to flag anomalies which the reviewers should look at.

In addition there are supertags for verbal functions, see section 10.10 and a supertag for adnominal functions, see section 9.

7.9   Auxiliary words

Items that are not covered by these tags are simply given the tag Aux, which serves to mark auxiliary verbs, modal particles, focus particles, negation etc. Information about these items is always recoverable from the categorial information in their morphology. The intuition behind the relation Aux is that it serves to mark off 'grammatical words' as opposed to 'lexical words'. There are certain adverbs whose meaning can sometimes be so weakened that they appear as grammatical words (*ergo* signalling simple progression for example), so the distinction between Aux and ADV is not always clear.

It can be a bit confusing that the Aux tag is used for so many different groups. What these words have in common is that they do not really bear a syntactic function towards their heads, they just give additional information about them. An article specifies the definiteness of its head noun; a negation negates its head word, a focus particle gives information about the information status of its head, auxiliary verbs gives tense and aspect information relating to the verb etc.

It is important to attend to scope issues: auxiliary verbs should be attached via Aux to their verbs; focus particles and constituent negation should be attached to the items they take scope over. In general, a scoping item is considered to scope over its mother node and all nodes dominated by its mother, and it should be placed accordingly. For more on this, see section 15.7.

8   Noun phrases without nouns

Sometimes a sentence-level function is not filled by a noun, but by an adjective, participle or a numeral. Such elements should be given the appropriate function in the sentence, and should *not* be related to an empty node representing the 'elliptical' subject, object or otherwise:

(39)
```
                    Root
                     |
                    PRED
                   biberunt
                   /      \
               SUB        OBL
              omnes        ex
                           |
                          OBL
                          illo
```

omnes ex illo biberunt

(40)
$$\begin{array}{c} \text{Root} \\ | \\ \text{PRED} \\ responderunt \\ | \\ \text{SUB} \\ prudentes \end{array}$$

responderunt prudentes
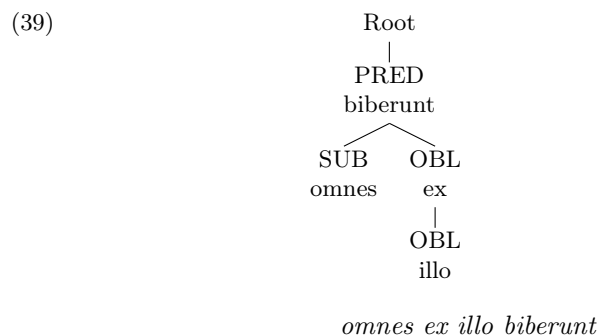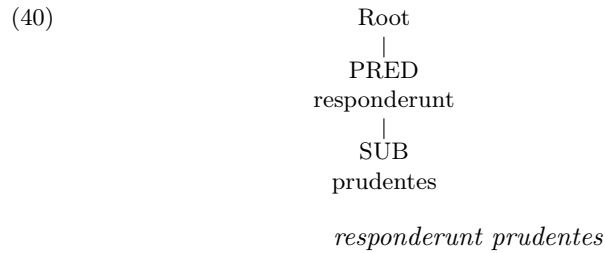
Before opting for such an analysis, the annotators should make sure that the adjective/participle is not predicative. The example above means 'The wise ones answered'. If the sentence meant 'Being wise, they answered' or 'They answered wisely', *prudentes* would have been an XADV, see section 10.9.2.

As we have seen in the sections on the subject (7.1) and the object (7.2) even prepositional phrases can be subjects and objects, especially when they express partitivity. Another construction, which is fairly frequent in Greek, is the nominalisation of prepositions and adverbs in constructions like *οἱ παρ' αὐτοῦ* 'the ones around him' or *οἱ νῦν* 'people nowadays'. In such cases, the preposition should be the head and the article an Aux, as usual:

(41)
$$\begin{array}{c} \text{Root} \\ | \\ \text{PRED} \\ \dot{\epsilon}\xi\hat{\eta}\lambda\theta o\nu \\ | \\ \text{SUB} \\ \pi\alpha\rho' \end{array}$$
$$\begin{array}{cc} \text{OBL} & \text{Aux} \\ \alpha\dot{\upsilon}\tauo\hat{\upsilon} & o\dot{\iota} \end{array}$$

οἱ παρ' αὐτοῦ ἐξῆλθον
'The ones around him went out'
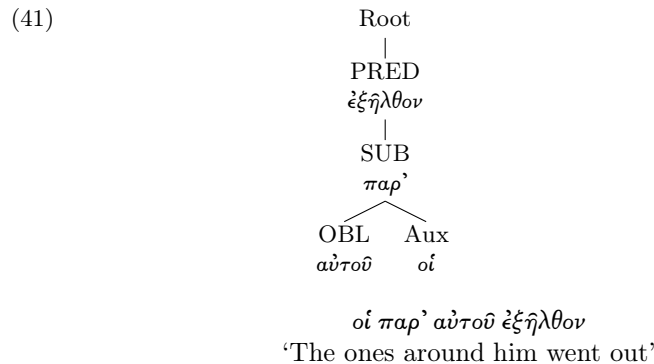
Sometimes there are several adjectives, participles and/or numerals. In such cases annotators will have to make a choice as to what is the head of the construction and what is the modifier/attribute. In general, the element which is most central to establishing the referent should be the head.

This means that numerals should not be the head if there are other available heads, so *alii duo* 'two others' should be

(42)
$$\begin{array}{c} \text{alii} \\ | \\ \text{ATR} \\ duo \end{array}$$

and not the other way around. Generally the hierarchy is

(43) adjectives, participles ≫ nominalized prepositional phrases ≫ demonstratives ≫ indefinite pronouns ≫ numerals ≫ relative clauses

This means that *tria haec* should be

(44)
```
        haec
         |
        ATR
        tria
```

and *haec omnia* should be

(45)
```
        haec
         |
        ATR
       omnia
```

Notice that since relative clauses are lowest on the hierarchy, sentences like *omnis quicumque confessus fuerit in me* will be representendes as relative clauses modifying the quantifier:

(46)
```
                    omnis
                      |
                    ATR
                 confessus
                  /   |   \
               Aux   OBL    SUB
              fuerit  in   quicumque
                      |
                     OBL
                      me
```

'whoever believes in me'

9 Adnominal tags

9.1 General

Dependents of nouns can be of various types. There are negations, emphatic particles etc. which are related via Aux, but with due consideration of scope issues (see section 15.7). In general, 'grammatical words' will bear the relation Aux, whereas 'lexical words' which are dependents of nouns will have various relations depending on their function. We recognise 4 main types:

ATR - attributes are elements which serve to restrict the reference of a noun. For example, in *canis albus* the adjective *albus* serves to restrict the possible reference of the noun *canis*. Attributes can be adjectives, prepositional phrases, relative clauses, participles, genitives, number words - but these categories can also have other adnominal functions, so it is important to pay attention here.

APOS - appositions are elements which serve to further elaborate on a nominal referent, without restricting the reference. Examples are *consul* in *Cicero consul*, *frater* in *Marcus frater*. Appositions are mostly nouns in the same case as their head, and non-restrictive relative clauses.

PART - partitives are elements which tell us to which group or whole the noun belongs. They are typically realised by genitives or by prepositions like *ex, de, ἀπό* etc.

NARG - some elements can be said to be *arguments* of nouns. The most clear example is the object genitive, as in *spes uincendi* or *amor fati*. Arguments can also be realised as prepositional phrases, as in e.g. *Dei amor erga nos*. Here *erga* is an argument of amor (and *nos* is in turn an argument of *erga*). Note that subject genitives are counted among the normal possessive genitives, as attributes. Arguments of adjectives are *not* NARGs but OBLs.

These categories are further explained and exemplified in the following sections. There is also supplementary information in section 16. If in doubt annotators should use the supertag ADNOM.

9.2 Attributes

Attributes are given the tag ATR. Here is an example with an adjective and a possessive pronoun:

(47)

```
                        Root
                         |
                       PRED
                        est
                   _____|_____
                  |             |
                SUB           XOBJ
                Pater        perfectus
             ____|____
            |         |
           ATR       ATR
          vester   caelestis
```
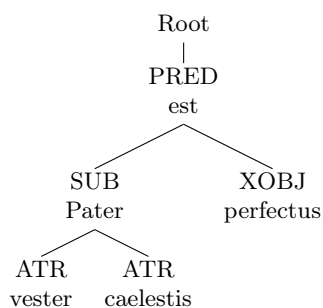
pater vester caelestis perfectus est.

Here is a subtree involving a descriptive genitive and a numeral which is an attribute of the genitive noun:

Descriptive genitives

(48)

```
             SUB
             puer
              |
             ATR
           annorum
              |
             ATR
            decem
```
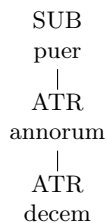
puer decem annorum

There are various other possibilities not illustrated here, such as possessive genitive (*patris filius*) and definitive genitives (*arbor fici*). Also, restrictive relative clauses are considered attributes, see section 10.4.

27

We use the tag ATR also for some constructions which are not traditionally called attributes, f.ex. because we do not allow nouns to take adverbial dependents. If a noun (f.ex. the name of a city or a small island in Latin) is equivalent to a directional prepositional phrase, dependent adverbs will have to be ATR and not ADV: **Non-traditional attributes**

(49)
```
                      Root
                       |
                     PRED
                   miserunt
            _____|_____
           |           |           |
          Aux         OBJ         OBL
          et       Barnaban    Antiochiam
                                    |
                                   ATR
                                  usque
```
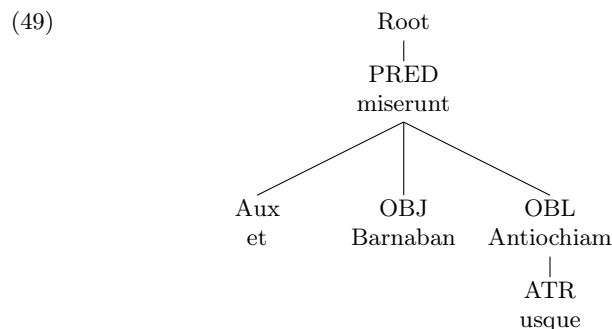
et miserunt Barnaban usque Antiochiam

Therefore it is useful to think of the ATR as not only comprising traditional attributes but all kinds of modifiers of nouns.

9.3 Appositions

This section deals with adnominal appositions. We also use the APOS tag in a variety of sentential contexts, see section 7.7.

Appositive nouns are attached to their head noun via the relation APOS. Such nouns are never restrictive (if they are, they are attached via the relation ATR instead), and we do not attempt to keep apart predicative appositions from other appositive nouns.

(50)
```
                    Root
                     |
                   PRED
                  detexit
             _____|_____
            |                 |
           SUB               OBJ
          Cicero        coniurationem
            |                 |
          APOS               ATR
          consul           Catilinae
```
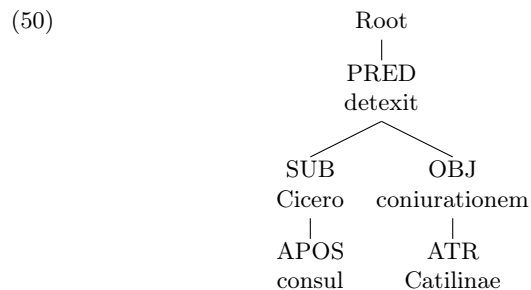
Cicero consul coniurationem Catilinae detexit

Non-restrictive relative clauses are also considered appositions, see section 10.4.

Notice in particular that 'second names', and modifiers of names, as in *Maria Magdalena* or *Iesus Christus*, are always considered appositions. In OCS, such 'second names' are generally denominal adjectives. **Names and modifyers of names**

There can sometimes be doubt whether a participle is an apposition or a predicative adjunct. In general, APOS should be chosen whenever a timeless property of the head is expressed, or at least a property which is not tied to the time of the governing verb, as in the following example:

(51)

```
                            root
                             |
                           PRED
                             |
                         Εἰσῆλθεν
                      /      |      \
               AUX  SUB            OBL
               /     \               \
             δὲ    σατανᾶς            εἰς
                                       |
                                     OBL
                                       |
                                    Ἰούδαν
                                   /      \
                               APOS       APOS
                                 |           \
                            καλούμενον       ὄντα
                             /    \            |
                          AUX   XADV         XOBJ
                          /        \           |
                        τὸν    Ἰσκαριώτην      ἐκ
                                                |
                                              OBL
                                                |
                                            ἀριθμοῦ
                                            /     \
                                         AUX     ATR
                                         /         \
                                       τοῦ       δώδεκα
                                                    |
                                                   AUX
                                                    |
                                                   τῶν
```
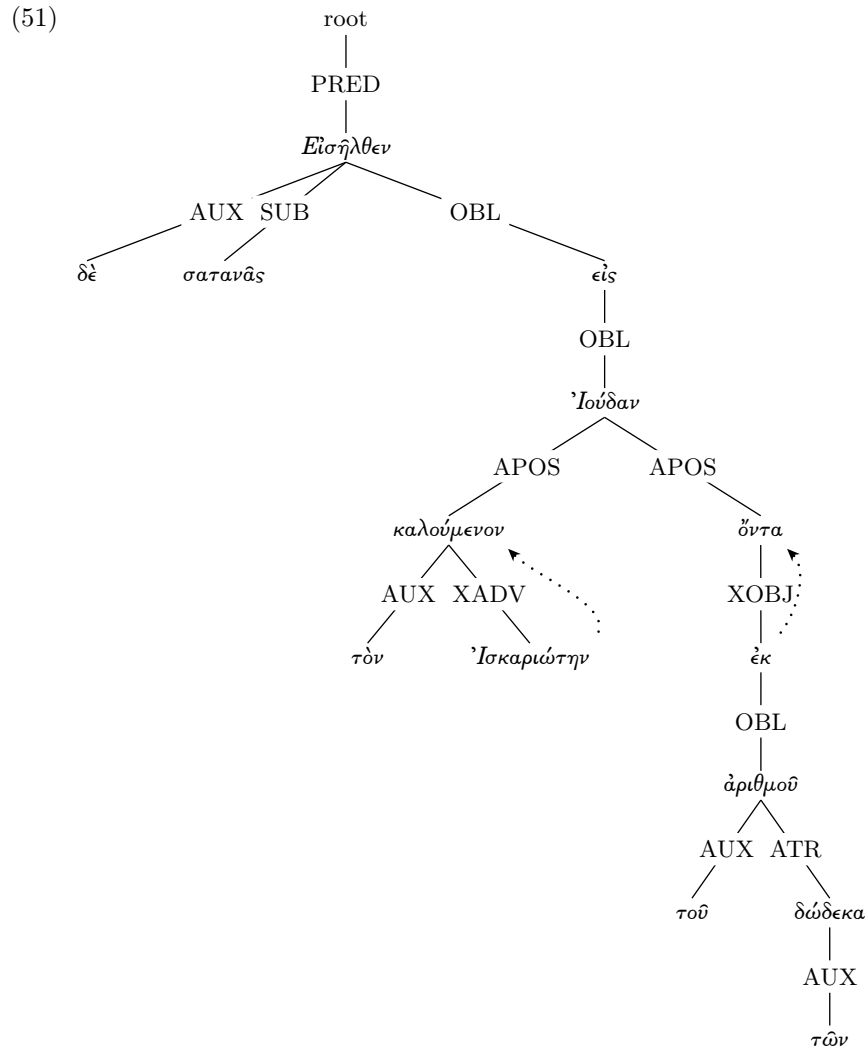
Εἰσῆλθεν δὲ σατανᾶς εἰς Ἰούδαν τὸν καλούμενον Ἰσκαριώτην, ὄντα ἐκ τοῦ ἀριθμοῦ τῶν δώδεκα
Satan entered Judas, called Iscariot, one of the Twelve.

Being called Iscariot and being one of the Twelve are properties of Judas that are not temporally connected with the event of Satan entering Judas, so we use XADV instead of APOS.

When multiple expressions with the same function occur, it is often difficult to decide which one to take as the head and which one as the apposition. In such cases we follow the surface word order: the expressions which comes first in the sentence is taken as the head, while the one that follows, is taken as an apposition.

(52)

```
                        root
                         |
                        PRED
                         |
                        сѫтъ
          _____/ / | _____
      AUX  AUX  AUX  SUB        XOBJ
       |    |    |    |           _____
       не   и    ли  сестры              оу
                     |              ____/  \____
                    ATR           OBL       APOS
                     |             |          |
                    его           ндсъ       сьде
```
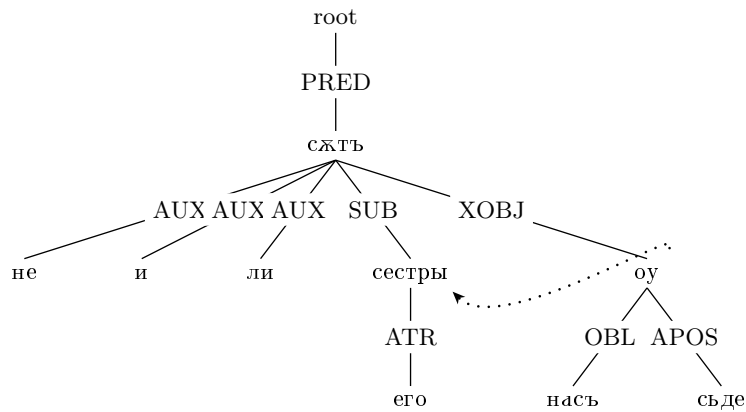
не и ли сестры его сѫтъ оу ндсъ сьде.
Are not his sisters with us, here?

(53)

```
                        root
                         |
                        PRED
                         |
                        εἰσὶν
          _____/  /  |  _____
       AUX  AUX     SUB        XOBJ
        |    |       |            _____
       καὶ  οὐκ    ἀδελφαὶ              ὧδε
                   /    \                |
                 AUX    ATR            APOS
                  |      |              |
                  αἱ    αὐτοῦ          πρὸς
                                        |
                                       OBL
                                        |
                                       ἡμᾶς
```
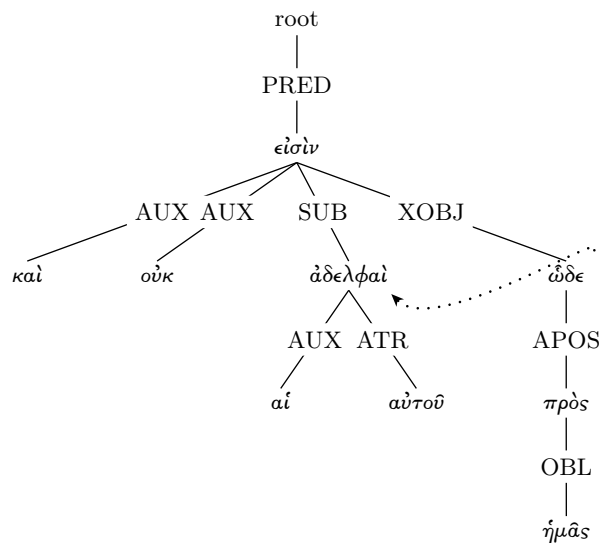
καὶ οὐκ εἰσὶν αἱ ἀδελφαὶ αὐτοῦ ὧδε πρὸς ἡμᾶς·
Are not his sisters here with us?

In the Greek text, the adverb comes first and the PP second while in the OCS text it is the other way around. Following linear principle, we take the PP as an apposition on the adverb in the Greek text while in the OCS text the adverb is

taken as an apposition on the PP. It is important to remember, however, that this approach is only possible when the two (or more) elements have *the same function*, in this case both functioning as place adverbials. A time adverbial should not be taken as an apposition on a place adverbial even though they both carry the ADV tag.

9.4 Partitives

Adnominal partitive expressions are typically realised as genitives or preposition phrases:

(54) (a)
```
            Root
             |
            PRED
           mortuus
           /    \
        Aux      SUB
        est      unus
                  |
                 PART
                  ex
                  |
                 OBL
                 eis
```
(b)
```
            Root
             |
            PRED
           mortuus
           /    \
        Aux      SUB
        est      unus
                  |
                 PART
                 eorum
```
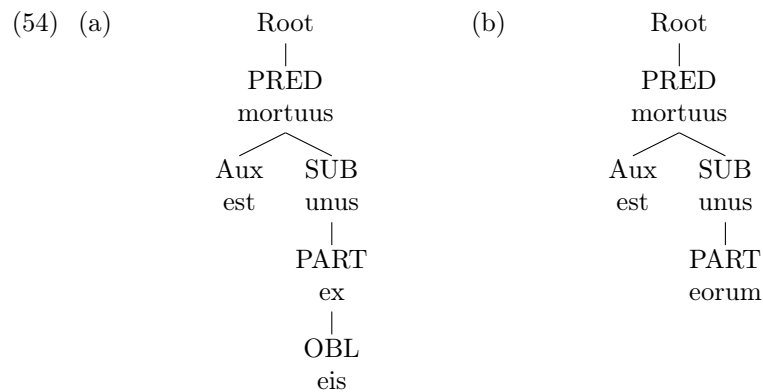
Unus ex eis mortuus est   *Unus eorum mortuus est*

Notice that PART is reserved strictly for adnominal partitives. It should *not* be used for partitive objects. These are OBJs, and only the morphology signals that they are partitives. This means that *ut ab agricolis acciperet de fructu vineae*, there is no partitive: *de fructu vineae* is a normal object of *acciperet*.

The PART relation is not limited to the meaning 'one of/some of'. It is also used for other part-whole relations as in

(55)
```
            Root
             |
            PRED
           accepit
           /    \
        SUB      OBJ
       Maria    libram
                  |
                 PART
                unguenti
```
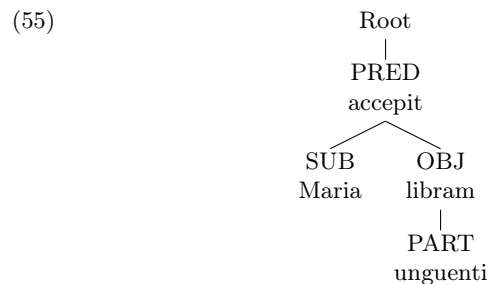
Maria accepit libram unguenti

Genitives required by numerals (as often happens in OCS, but also in other languages) should be analysed as PART:

(56)
```
            Root
             |
           PRED
           имѧтъ
             |
            OBJ
            пѧть
             |
           PART
           хлѣбъ
```
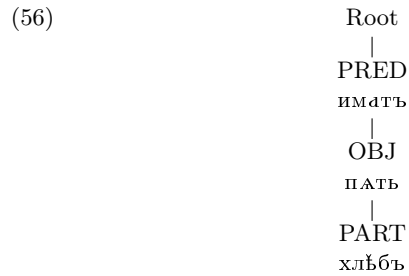
In general, PART should not be used for 'components' such as body part nouns, or 'the root of the tree' and similar: there should be a *contingent* part-whole relationship, not a permanent one. The head will generally be a measure noun of some sort.

9.5 Arguments of nouns

Nouns, especially deverbal nouns, can take arguments just like verbs.[4] A clear case are so-called objective genitives, but also other items like prepositional phrases can be NARGs:

(57)
```
              Root
               |
             PRED
              est
            /      \
         SUB        XOBJ
      baptismus    ingressio
                      |
                    NARG
                      in
                      |
                    OBL
                  sanctitatem
                      |
                    ATR
                    Dei
```
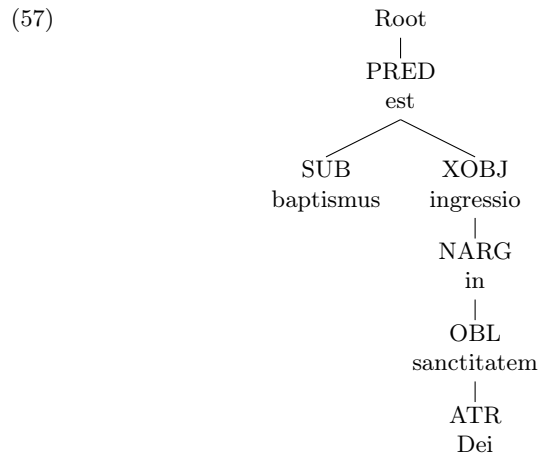
baptismus est ingressio in sanctitatem Dei

In OCS, arguments of nouns can sometimes be denominal adjectives, as бзии in the following example:

(58) и бѣ об ноштъ въ молитвѣ бзии

Verbal nouns, such as infinitives and gerundives, are often NARGs when they are dependent on deverbal nouns, but they can also restrict the nouns, see section 15.24.

---

[4]However, nouns very rarely take direct object arguments, although some exceptions are found e.g. in early Latin.

(59)

```
                        Root
                         |
                        PRED
                         |
                         est
                        /    \
                     SUB      XOBJ
                     /          \
                  spes ◄·················· in
                  /   \                    |
              NARG    ATR                  OBL
               |        \                   |
            vincendi    tota          confirmatione
```

Tota spes vincendi est in confirmatione
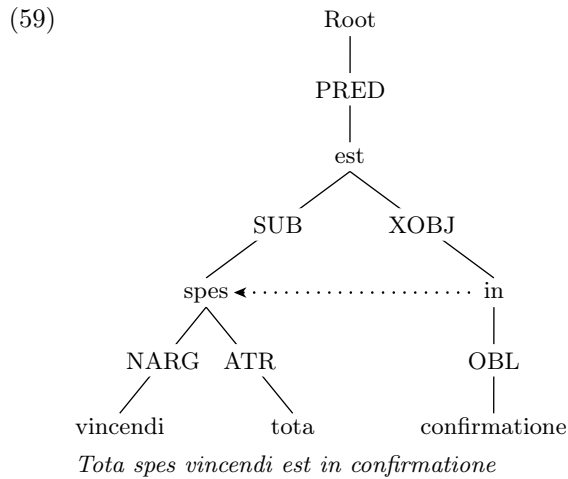
In such cases, there is not always a clear subject in the sentence. But if there is one, it should be marked by a slash arrow. Consult sections 15.10 and 15.11 for further information.

10   Embedded predication

Embedded predications are divided in two major classes according to whether they can have their own, overt subject or not. Predications which cannot have an overt subject are called *open*, because their subject is supplied from outside the construction. They include some infinitives, such as the complement infinitives of *posse* - witness the grammaticality of *potesne mihi auscultare* as opposed to **potesne te mihi auscultare* - and conjunct participles, whose subject is always coreferent with some other element of the sentence, but never expressed as a dependent of the participle. Open predications are further discussed in section 10.9. Sections 10.1 to 10.8 describe various kinds of closed predications.

Open and closed predications

The distinction between open and closed predications has to do with being a sentence or not. 'Real' subordinate sentences, introduced by subjunctions, have all it takes to be a sentence: a subject, a predicate, aspect, voice, etc. etc. Accusative with infinitive structures and absolute construction and even the *ab urbe condita*-construction also have these characteristics. So we can refer to these as subordinate *sentences*. Conjunct participles are also like sentences in some ways, but differ in a crucial respect, since they do not have their own subject.

10.1   The basic types of subordinate clauses

Traditional grammar divides subordinate clauses into three groups: substantival sentences, adjectival sentences and adverbial sentences. This distinction reflected in our annotation.

33

10.1.1   Substantival sentences

Substantival sentences are also called complement sentences because they complement the main verb. They often seem to have the same functions as nouns, most often as objects, but sometimes as subjects. However, we do not attempt to keep such functions apart, but use COMP for all of them. We treat them this way, because in a sentence like *dicitur Homerum caecum fuisse*, it is not easy to tell whether *Homerum caecum fuisse* is the subject of *dicitur* or rather the object of an impersonal construction.

In effect COMP 'overrules' other relations whenever an argument is sentence-formed. Most of the time it functions as a subject or an object, but sometimes sentences can be arguments of nouns, in which case they are marked as COMP rather than NARG; or as predicatives (in sentences like 'My will is that'), where they are COMP instead of XOBJ.

Substantival sentences are typically AcIs, indirect questions and subordinate clauses introduced by *quod, quia*, ꙗко and ὅτι (in the meaning 'that', not 'because', which introduces an adverbial sentence). Notice that in Biblical Greek ἵνα is also used to introduce complement clauses much more regularly than in Classical Greek. In Latin, complement clauses can also be introduced by *ut, ne, quominus* and *quin.*The criterion is that the sentence is selected by the verb: *persuadere* selects an *ut*-sentence, f.ex., so this sentence is a COMP. The same goes for locutions like *prohibeo quominus* and *haud dubito quin.* Sometimes a subordinate clause is not introduced by any subjunction at all and such subordinate clauses are always COMPs.

Types of complement sentences

The COMP relation takes precedence over other relations, even in adnominal contexts. A complement sentence which is dependent on a noun should therefore be COMP, not NARG, as in τὸ εὐαγγέλιον ὅτι..., see 6516.

Notice that an *ut*-sentence which depends on *persuadere* differs from the *ut*-sentence which can be added to any verb, to express intention. A fairly comprehensive list of verbs that take completive *ut* in Latin is: *accidit, adhortor, adipiscor, admoneo, caveo, cogo, concedo, constituo, contendo, contingit, convenit, decerno, denuntio, deprecor, dico, edico, efficio, enitor, evenit, facio, fit, flagito, hortor, impello, impero, impetro, incito, interdico, interest, iubeo, laboro, mando, mereo, moneo, obsecro, opto, oro, permitto, persuadeo, peto, placet, posco, postulo, praecipio, praescribo, precor, rogo, scribo, sequitur, sino, statuo, studeo, suadeo, subigo, volo* No such list is available for Biblical Greek or the other languages, but the intuition to follow is that with verbs with the above semantics, the *ut*-sentence belongs closer to the verb than in other cases, where it introduces an adverbial sentence.

For guidelines on how to annotate the various complement sentences, consult sections 10.2 (finite sentences with subjunctions), 10.3 (finite sentences without subjunction), 10.6 (accusative with infinitive) and 10.5 (indirect questions).

Our representation is therefore:

(60)

```
                    Root
                     |
                    PRED
                     |
                   dicitur
                     |
                    COMP
                     |
                   fuisse
                    /  \
                 SUB    XOBJ
                 /        \
          Homerum ◄······· caecum
```

dicitur Homerum caecum fuisse
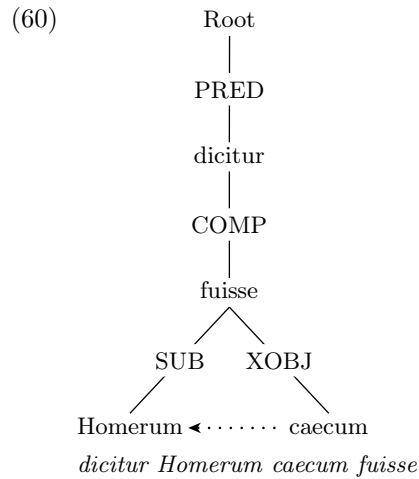
Notice that the so-called nominative with infinitive is treated differently:

(61)

```
                    Root
                     |
                    PRED
                     |
                   dicitur
                    /   \
                 SUB     XOBJ
                 /         \
         Homerus ◄········ fuisse ◄·.
                             |        ·.
                            XOBJ       ·.
                             |          ·.
                           caecus ·······
```

dicitur Homerus caecus fuisse
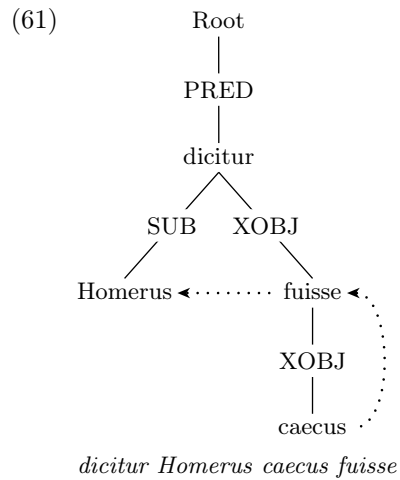
In the nominative with infinitive, the infinitive no longer has its own subject, so it is an XOBJ and not a COMP.

Another common variant of the complement clause is the indirect question:

10.1.2 Adjectival sentences

Relative sentences are adjectival in the sense that they have the same functions as adjectives. They are often adnominal (ADV and ATR), but can also be 'substantivized' and used directly for sentence-level functions without having a antecedent.

Relative sentences are the only adjectival sentences and their annotation is further described in section 10.4.

10.1.3   Adverbial sentences

Adverbial sentences are sentences which express information about time, intention, result, cause, concession, condition etc. Absolute constructions (10.7) belong here. Otherwise, they are always introduced by subjunctions and treated in section 10.2. Some subjunctions which introduce adverbial sentences in latin are: *cum, donec, dum, ne, nec, neque, nisi, postquam, prout, quando, quia, quoadusque, quod, quoniam, si, sicut, siquidem* In Greek, at least *ἔαν, εἴ, ἐπάν, ἐπεί, ἐπειδή, ἔως, ἡνίκα, ἵνα, ὅταν, ὅτε, ὁτι, ὥστε* introduce adverbial sentences.

10.2   Finite subordinate clauses with subjunctions

In subordinate clauses, except relative clauses, the finite verb is attached to the subjunction via the same relation PRED that we use in main clauses. The subjunction is related to the matrix clause via COMP if it is a complement clause:

(62)

```
                        Root
                         |
                        PRED
                       audistis
                         |
                        COMP
                        quia
                         |
                        PRED
                       dictum
                      /   |   \
                  Aux    OBL    COMP
                  est  antiquis occides
                                  |
                                 Aux
                                 non
```
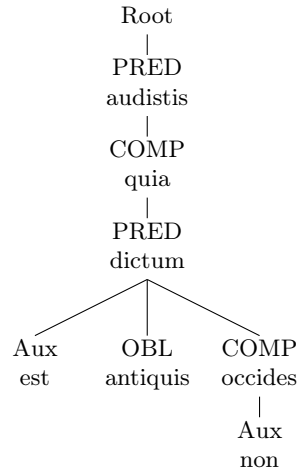
audistis quis dictum est antiquis non occides

(63)

```
                        Root
                         |
                        PRED
                       datum
                      /   |   \
                  Aux    OBL    COMP
                  est   illis    ne
                                  |
                                 PRED
                               occiderent
                                  |
                                 OBJ
                                 eos
```

36
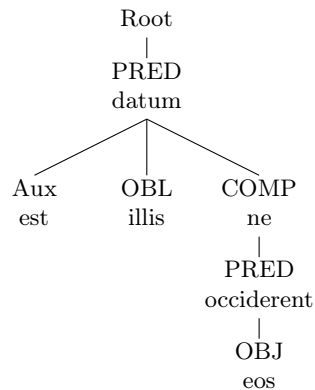
Only a restricted group of subjunctions introduce COMPs, see the discussion in in section 10.1.1. Many more subjunctions introduce adverbial sentences, consult section 10.1.3.

In Greek, verbs of saying such as λέγειν or εἰπεῖν may take a complement clause introduced by ἵνα, in which case the speech verb itself is intrepreted as expressing the will of the speaker.

(64)   root   6622

```
                        root
                         |
                        PRED
                         |
                        εἶπεν
                       /      \
                    OBL        COMP
                     |           |
                  μαθηταῖς       ἵνα
                   /    \         |
                AUX     ATR      PRED
                 |       |         |
                τοῖς    αὐτοῦ   προσκαρτερῇ
                                   |
                                  SUB
                                   |
                               πλοιάριον
```
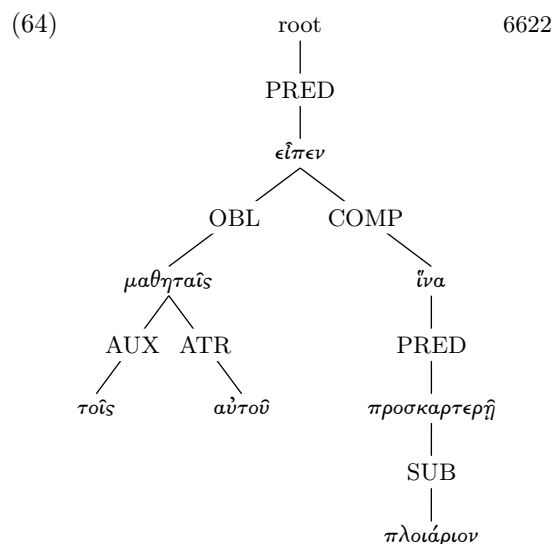
When a speech verb is overtly present, we assign the relation COMP to the subjunction ἵνα. When no speech verb is present, however, ἵνα may function as a subjunctive marker and the clause may act as a main clause equivalent to an imperative clause.

Notice that in most cases the subjunction will only have a single daughter, the verb, although sometimes a subjunction can be modified. For example, we can have εἰ καί or *et si* (= *etsi*) where καί/*et* modifies the subjunction:

Modification of a subjunction

(65)

```
                 ADV
                  si
                /      \
             Aux       PRED
             et     scandalizati
                      /      \
                   SUB       Aux
                  omnes    fuerint
```

et si omnes fuerint scandalizati
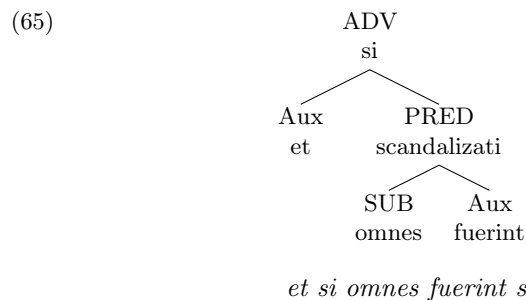
This means 'even if everyone is scandalized'. In cases where *et si* means 'and if', *et* should be attached to the main verb:

(66)

```
                            Root
                             |
                            PRED
                          deficient
              ┌──────────────┼──────────────┐
             ADV            Aux            ADV
             in             et             si
              |                             |
             OBL                          PRED
             via                        dimisero
                                      ┌─────┴─────┐
                                     OBJ         OBL
                                     eos          in
                                                  |
                                                 OBL
                                               domum
                                                  |
                                                 ATR
                                                suam
```
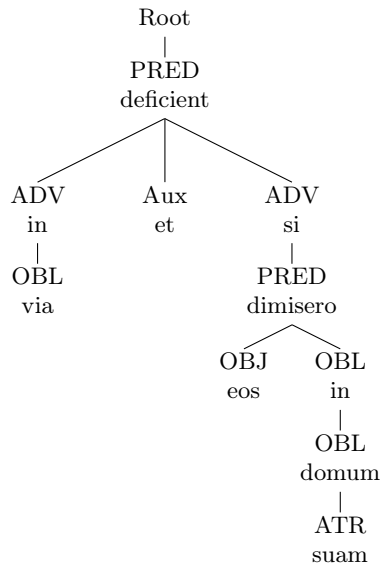
et si dimisero eos in domum suam deficient in via

Here the meaning is 'And if I send them home, they will faint on their way', ie. *et* modifies the whole sentence, and not the subjunction alone.

10.3   Finite subordinate clauses without subjunction

It can happen that a finite subordinate clause is not introduced by a subjunction, e.g. when *ut* is left out. In such cases, the function of the subordinate clause is annotated directly on the verb, and the function is almost always COMP:

(67)

```
            Root
             |
            PRED
            vide
             |
           COMP
          dixeris
             |
            OBL
          nemini
```

vide dixeris nemini

10.4   Relative clauses

Relative clauses differ from other finite subordinate clauses in that they do not have a subjunction. Instead, they are introduced by an element (the relative pronouns or adverbial) which also has a role in the sentence, such as subject, object, oblique or adverbial. Therefore these sentences should be headed by

the verb directly, and the relative or interrogative should be annotated with its function within the clause. In other words, it is **never** correct to let an adverbial or relative word head a sentece. This also goes for relative adverbs like *ubi* and similar words.

Annotators are often tempted to let the relative pronoun depend on its antecedent: after all it agrees with its antecedent in gender and number. But we annotate syntactic *function* and function is indicated by *case*. On the other hand, the verb of the relative clause should be made dependent on the pronoun's antecedent (if there is one) since that is what the relative clause modifies.

The verb of such subordinate sentences is given the relation corresponding to the function of the sentence as a whole. There are several possible functions.

The verb of a relative clause with an antecedent is attached to the antecedent via the relation ATR (restrictive relative clauses) or APOS (non-restrictive relative clauses): **Adnominal relative clauses**

(68)
```
                    Root
                     |
                   PRED
                 illudebant
          _____/    |    _____
        OBL          Aux           SUB
        ei            et           viri
                                    |
                                   ATR
                                 tenebant
                                 /     \
                              SUB      OBJ
                              qui      illum
```
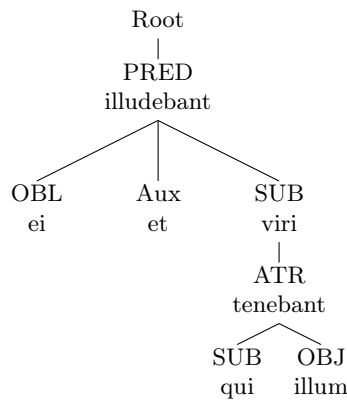
Et viri qui tenebant illum, illudebant ei

(69)
```
                 Root
                  |
                PRED
                dicit
                  |
                 SUB
                Deus
                  |
                APOS
                 est
              /        \
           SUB        XOBJ
           qui      omnipotens
```
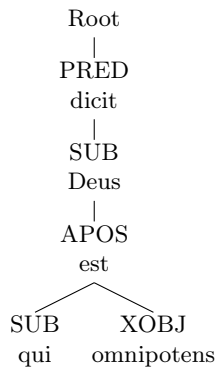
dicit Deus qui est omnipotens

Whenever there are two verbs which share one relative word, we make the relative word dependent on the closest verb, but it is important to add a shared argument slash from the second verb to show that we deal with a relative clause.

However, this is only possible when the relative pronoun has the same function in both clauses, see below.

If the verb of the relative clause was instead attached via the relation ATR, this would correspond to the semantic interpretation "the god who is omnipotent" (in contrast to some other god). If it is not possible to decide whether a relative clause is restrictive or not, use the supertag REL.

It is important that not only relative pronouns, but also relative adverbs should be annotated this way, since relative adverbs also have a function within their own clause. The same goes for interrogative adverbs. The following sentence illustrates *ubi* in both uses:

Relative adverbs

(70)

```
                        Root
                         |
                        PRED
                         |
                        est
                       /    \
                   XOBJ      SUB
                    |          \
                   ubi ·········► refectio
                               /        \
                            ATR          ATR
                             |             \
                            mea          manducem
                                        /   |    \
                                     ADV   OBJ   ADV
                                      |     |      \
                                     ubi  pascha   cum
                                                    |
                                                   OBL
                                                    |
                                                 discipulis
                                                    |
                                                   ATR
                                                    |
                                                   meis
```

ubi est refectio mea ubi pascha cum discipulis meis manducem

(71)
```
                         Root
                          |
                        PRED
                       обрѣте
                          |
                         OBJ
                       мѣсто
                          |
                         ATR
                          бѣ
                        /    \
                     ADV     XOBJ
                   идеже    написано
```
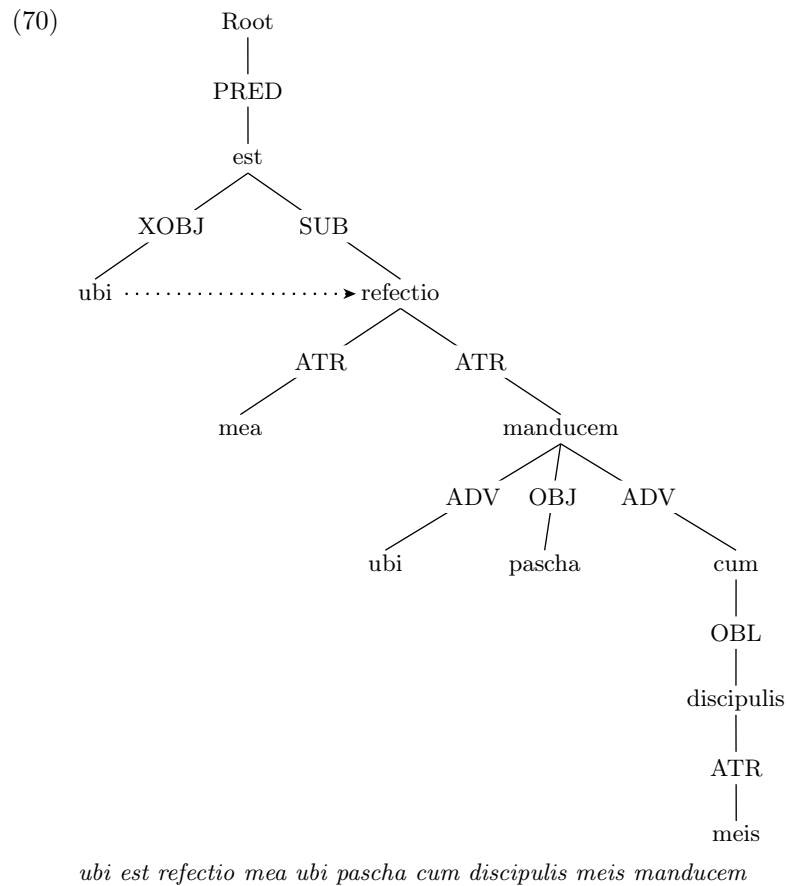
обрѣте мѣсто идеже бѣ написано

If there is no antecedent for the relative pronoun, the verb of the relative clause will itself bear a sentence-level function within the matrix clause:

Relatives without antecedent

(72)
```
              Root
               |
             PRED
            audiat
               |
             SUB
            habet
            /    \
        SUB      OBJ
        qui     aurem
```
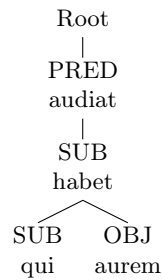
qui habet aurem, audiat

Although this implies that we take the relative clause to be a noun phrase, we avoid adding nominal modifiers to it, so quantifiers such as $\pi\hat{a}\varsigma$ and *omnis* are taken as heads of the relative clauses, see also **??**.

Notice that this style of annotation implies that the relation of the subordinate verb changes if the correlate is left out. Consider the following two sentences:

(73) (a)
```
        Root              (b)         Root
         |                             |
       PRED                          PRED
      scribe                        scribe
         |                             |
       OBJ                           OBJ
        ea                          uides
         |                             |
       ATR                           OBJ
      uides                         quae
         |
       OBJ
      quae
```

41
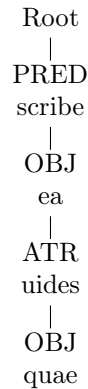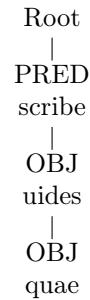
scribe ea quae vides   *scribe quae vides*

Leaving out the correlate changes the function of the relative clause, which is annotated on its verb, from an attribute which restricts the reference of *ea* to a direct object of *scribe*.

A variant of headless relative clauses are those which have an internal head. In this case the noun is given its function inside the relative clause (normally with the relative pronoun as an ATR):

Internally headed relative clauses

(74)
```
                        Root
                         |
                        PRED
                       metietur
               /          |          \
             ADV         Aux          ADV
            vobis         et         mensi
                                    /     \
                                  Aux      ADV
                               fueritis     in
                                            |
                                           OBL
                                         mensura
                                            |
                                           ATR
                                           qua
```
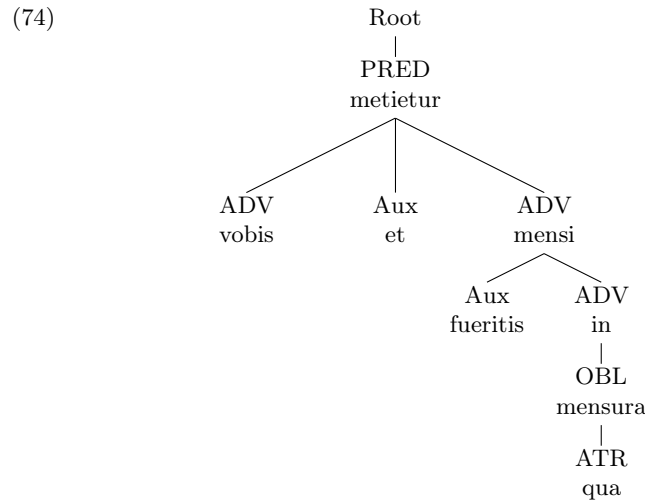
et in qua mensura mensi fueritis metietur vobis
'In what measure ye mete it shall be measured to you'

Sometimes the correct position of the relative pronoun can be deep inside the clause it introduces, e.g. in an embedded accusative with infinitve:

(75)
```
                Root
                 |
                PRED
             manducavit
                 |
                OBJ
               panes
                 |
                ATR
               licet
              /     \
            Aux      COMP
            non    manducare
                       |
                      OBJ
                     quos
```
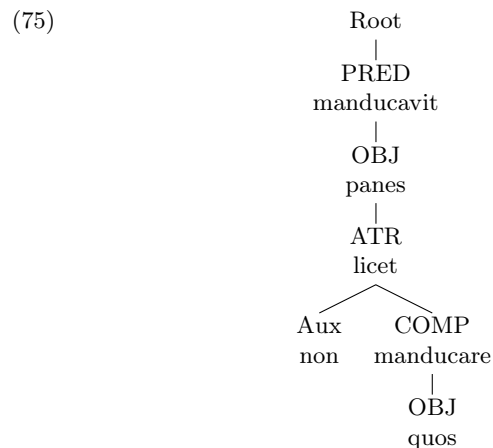
Sometimes a sentence where the relative pronoun does not have a role is coordinated with the real relative clause. We still coordinate such clauses, and use

42

shared argument slashes where we can. In the following example, the relative pronouns arguably does have a function in both sentences, but not the same function (it could be an ADV in the second clause), so we cannot express this in our notation:

(76)

```
                                    root                                    . ι
                                     |
                                   PRED
                                     |
                                 вьзвѣсти
                        ┌─────────┘ └──────────┐
                    AUX OBL                    OBJ
                   ┌────┘ └──┐          ┌────────┘
                   ι        имь                  и
                                        ┌────────┘ └──────┐
                                      OBJ               OBJ
                                   ┌────┘ └──┐          ┌──┘
                                 сътвори            помиловı
                            ┌────┼────┐               |
                          OBJ  OBL  SUB              OBJ
                          |     |    |                |
                        елико   ти   гъ              тѧ
        вьзвѣсти имь. елико ти гъ сътвори и помиловı тѧ
```
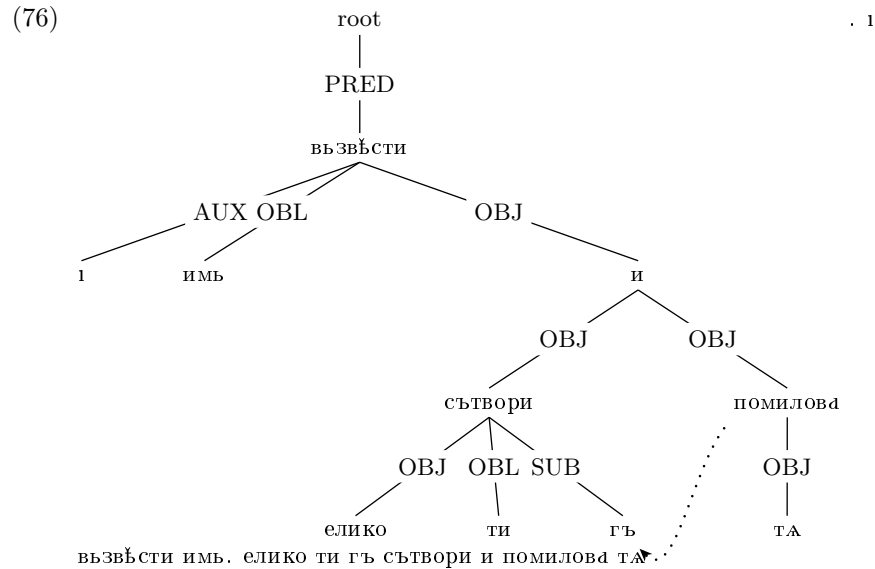
In correlative constructions the relative sentence is made a dependent on the correlative: if the relative sentences precedes it is in most cases an APOS (as this is a topicalizing construction, cf. 15.21. Else it is normally, but not always, restrictive.

Finallly, notice that infinitives sometimes can have a function similar to that of relative clauses, see section 15.24.

10.5 Indirect questions

Indirect questions are like relative sentences in that there is no element which introduces the sentence. The interrogative pronoun/adverbial has a function inside the sentence and must be annotated accordingly. The verb of the indirect question is given the function of the whole subordniate sentence, which in the case of indirect questions is almost always COMP:

(77)

```
                Root
                 |
               PRED
             quaesivit
                 |
               COMP
             exivisset
                 |
               ADV
              quare
```

43
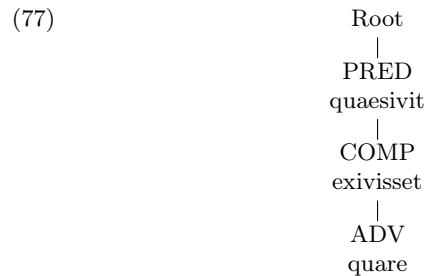
However, in rare cases a dependent question can have adverbial (e.g. conditional) force:

(78)

```
                              Root
                               |
                             PRED
                             dabit

       OBJ          OBL          Aux              ADV
      lapidem       illi       numquid           petet

                                          SUB     Aux      OBJ
                                          quis   autem    panem
                                           |
                                          PART
                                           ex
                                           |
                                          OBL
                                         vobis
```
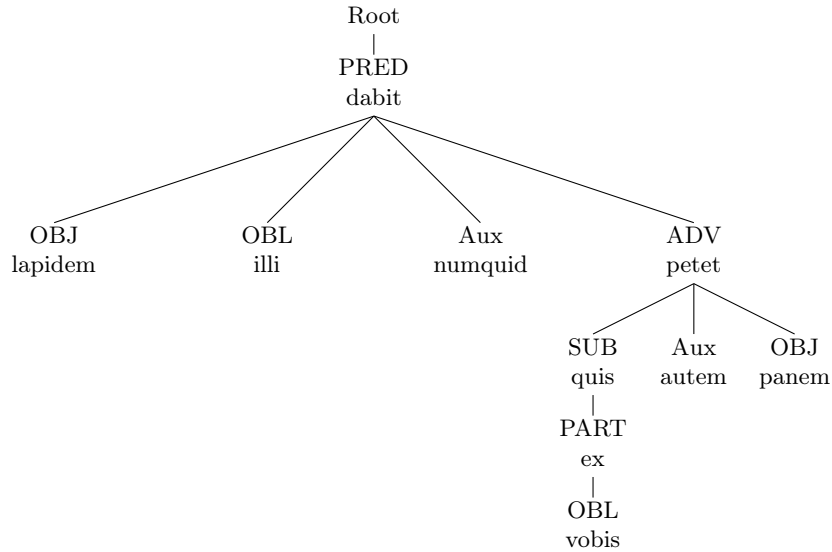
quis autem ex vobis patrem petet panem numquid lapidem dabit illi

10.6 Infinite predication: Accusative with infinitive (AcI)

Again we let the infinitive verb stand in for the whole construction. In the normal case this construction consists of a subject in the accusative, a predicate which is a verb in the infinitive and possibly further arguments and adjuncts. The infinitive is given the relation COMP:

(79)

```
                    Root
                     |
                   PRED
                   vidi
                     |
                   COMP
                 cecidisse

         SUB      OBL      OBL
       stellam     de       in
                    |        |
                   OBL      OBL
                  caelo    terram
```
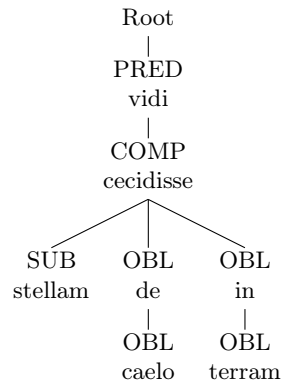
vidi stellam de caelo in terram cecidisse

However, it can happen that the predicate infinitive is lacking. Most often the elided infinitive is *esse* or a similar verb, and we introduce an empty, verbal node:

Elided infinitive

44

(80)

```
                        Root
                         |
                        PRED
                       vidimus
            ┌─────────────┼─────────────┐
           Aux           ADV           COMP
           aut          quando          0
                                   ┌─────┴─────┐
                                  SUB        XOBJ
                                  te          aut
                                         ┌─────┴─────┐
                                       XOBJ        XOBJ
                                      infirmum      in
                                                     |
                                                    OBL
                                                  carcere
```
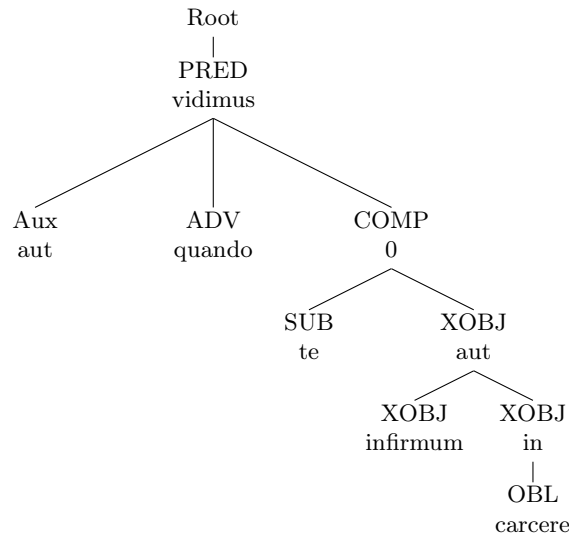
quando te vidimus infirmum aut in carcere

Accusative with infinitive structures should be kept apart from pure infinitives which cannot take a subject, as with the complement infintives of auxiliary verbs like *posse, velle*. For the annotation of the latter structures, consult section 10.9.

However, since the subject is not always present in an accusative with infinitive structure, it is sometimes hard to tell whether a given infinitive is part of an AcI with an unexpressed subject or is an open complement. In addition, some verbs allow both constructions. For example, both *uolo id facere* and *uolo me id facere* are possible constructions in Latin. In examples like *uolo id facere*, *facere* should be treated as an open complement (XOBJ) and not part of an AcI with a deleted subject. An elliptical AcI should be assumed only if the matrix verb does not allow an open complement construction. **AcI without subject**

There are structures where one could be in doubt whether an accusative noun is the object of the main verb or the subject of the subordinate verb. Consider f.ex. the causative construction with *facere* + accusative noun + infinitive, as in *fecit omnes accumbere*. *omnes* could be analysed as the subjet of *accumbere* or as the object of *fecit*. Both analyses would in principle be possible, but annotators should always use the AcI analysis with the accusative noun dependent on the infinitive: **COMP vs OBJ+XOBJ**
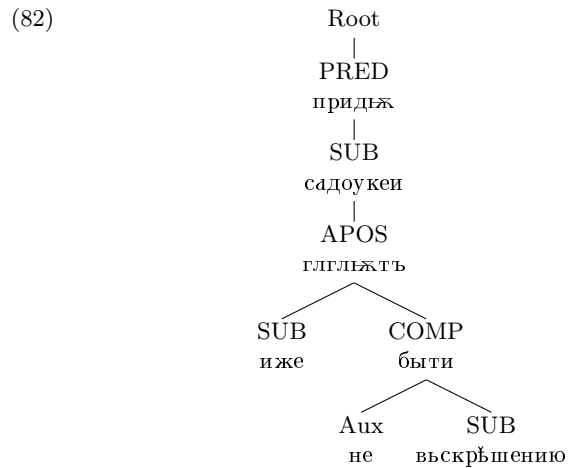
(81)

```
        Root
         |
        PRED
        fecit
         |
        COMP
      accumbere
         |
        SUB
       omnes
```

45
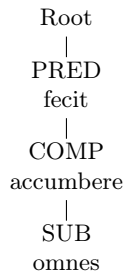
This is a purely conventional choice and applies only to accusative nouns. In structures with a dative noun and an infinitive, f.ex, the noun is made dependent on the matrix verb, as in *licet mihi exire*, see section 15.8.
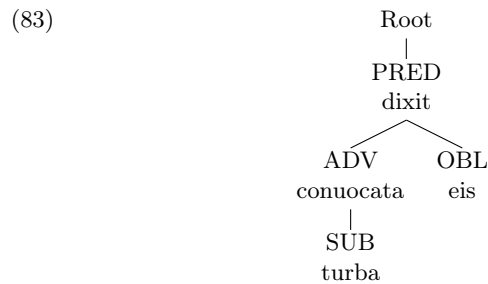
OCS sometimes has datives with infinitives that behave very much like AcI. The construction consists of a dative subject, a predicate which is a verb in the infinitive, and possibly other dependents, and the entire construction is a COMP to e.g. a speech verb. It should be analysed like AcIs:

Dative with infinitive

(82)
```
                        Root
                         |
                        PRED
                       придѫ
                         |
                        SUB
                      садоукеи
                         |
                        APOS
                     глглѭтъ
                    /          \
                 SUB            COMP
                 иже            быти
                             /        \
                          Aux          SUB
                          не      вьскрѣшению
```

придѫ садоукеи иже глглѭтъ не быти вьскрѣшению (Mark 12:18)

10.7   Infinite predication: absolute constructions

Absolute constructions are embedded predications with an adverbial relation to the rest of the sentence. We consider the participial verb to be the head of the construction. It is therefore related to the matrix clause via the relation ADV:

(83)
```
                        Root
                         |
                        PRED
                        dixit
                      /        \
                   ADV          OBL
                conuocata       eis
                   |
                  SUB
                 turba
```

convocata turba dixit eis

The predicate in an absolute construction need not be a verb: it can be a noun or an adjective. In such cases, we assume an empty verb:

(84)

```
                              Root
                               |
                             PRED
                            detexit
            ┌─────────────────┼─────────────────┐
          OBJ               ADV                SUB
      coniurationem           0              senatus
           |            ┌──────┴──────┐
          ATR          SUB          XOBJ
        Catilinae    Cicerone      consule
```
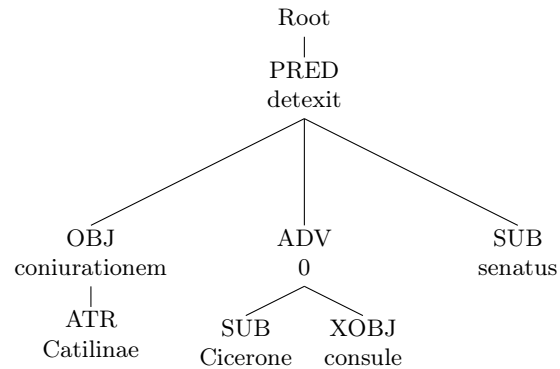
Cicerone consule senatus coniurationem Catilinae detexit

10.8 Infinite predication: dominant participles and gerundives

Latin has a special type of an embedded predication which looks like a normal noun phrase: sometimes noun + agreeing participle/gerundive corresponds to an English translation with a verbal noun transl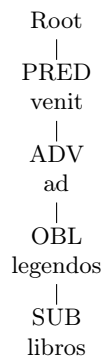ating the participle (or gerundive) + a dependent genitive. Thus *ab urbe condita* means 'from the founding of the city', and not 'from the founded city'; *Caesar occisus* can mean 'the murder of Caesar' (ie. 'that Caesar was murdered') and not 'the murdered Caesar'. In such cases, we consider the participle/gerundive to be the head of the construction and the noun is attached via the SUB-relation, whereas the participle/gerundive is annotated with the function of the whole predication.

Probably the single most frequent case of such a construction, is the *ad* + gerundive + noun construction. In this locution, the noun is almost always dependent on the gerundive:

ad + **noun** + **gerundive**

(85)

```
         Root
          |
        PRED
        venit
          |
        ADV
         ad
          |
        OBL
       legendos
          |
        SUB
       libros
```

venit ad libros legendos

But the *ab urbe condita*-construction is found in other contexts as well:

47

(86)
```
                    Root
                     |
                    PRED
                    est
                     |
                    XOBJ
                   superbus
                     |
                    ADV
                   victa
                     |
                    SUB
                  serpente
```
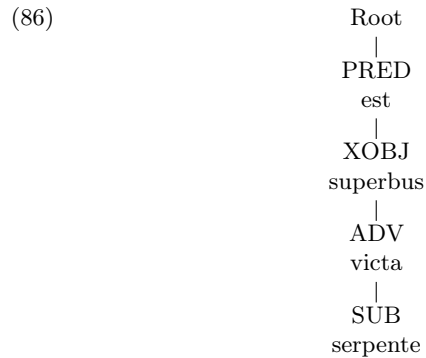
superbus victa serpente est '(Apollo) is proud that the serpent was defeated'

10.9   Open predications

Open predications are predications that do not supply their own subject, but get a subject via coreference relations[5] within the sentence. Their subject is not necessarily a nominative. Finite verb forms never take part in open predication, only infinite forms. The infinite verb form heads the whole construction and is related to the matrix verb via the relation corresponding to the function of the embedded predication + a prefix X. We distinguish two kinds of open predications according to whether they are arguments which *complement* a verb or adverbials which *modify* a verb.

In some cases, infinite verb like infinitives and gerunds can depend on nouns. In these cases, they are never given the relations XOBJ or ADV, but are most often NARGs. Consult section 9.5, as well as 15.10 on gerunds and 15.11 on infinitives.

10.9.1   XOBJ

Infinitives can also be objects of verbs. This typically happens with auxiliary verbs like *uelle, posse* etc.:

---

[5]These relations are normally analysed in terms of *raising* and *control*

(87)

```
                    Root
                     |
                   PRED
                     |
                  potest ◄·····
                   /  \        ·.
                 /      \        ·.
              Aux      XOBJ        ·.
               |         \          ·.
              non       facere ·
                         /  \
                       /      \
                     OBJ     XOBJ
                      |         \
                     se ◄············ salvum
                      |
                     ATR
                      |
                    ipsum
```

non potest se ipsum facere salvum
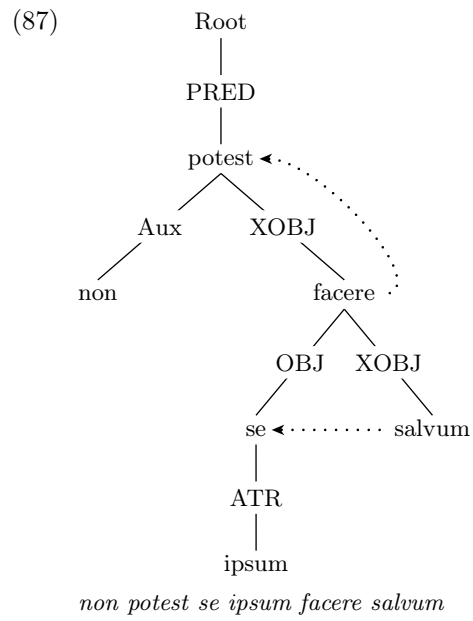
But it is also found with some other verbs, such as *dare*:

(88)

```
          Root
           |
         PRED
           |
         dabo
          /  \
        /      \
     OBL      XOBJ
      |          \
     ei ◄········ edere
                    |
                   OBJ
                    |
                    de
                    |
                   OBL
                    |
                  ligno
                    |
                   ATR
                    |
                  vitae
```

dabo ei edere de ligno vitae

49
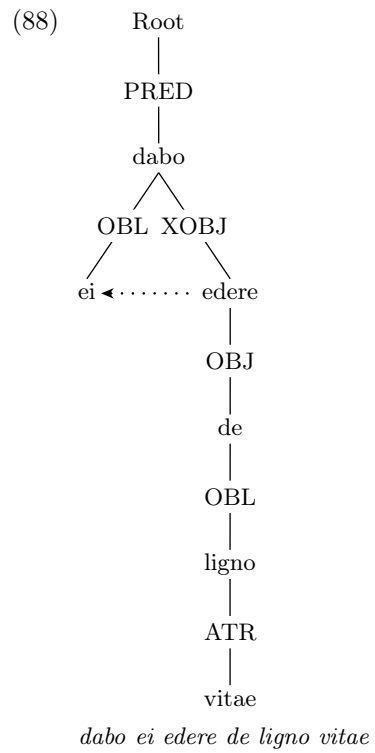
Such constructions are different from other embedded predications (AcI's etc.) in that no subject can be added. Instead the subject is supplied by coreference with an element which is either present in the matrix clause, such as *ei* in the last example, or implied by the argument structure of the matrix verb, as the implied subject of *potest*. This coreference should be marked by means of the slash notation, see section 14.
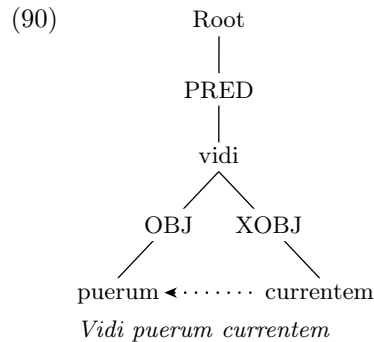
The so-called nominative with infinitive construction also involves an XOBJ:

Nominative with infinitive

(89)
```
              Root
               |
              PRED
               |
           putabantur
             /      \
          SUB        XOBJ
          /            \
   fabellae ◂········ scribi
       |                |
      ATR               AG
       |                |
   Terentii             a
                        |
                       OBL
                        |
                     Laelio
```
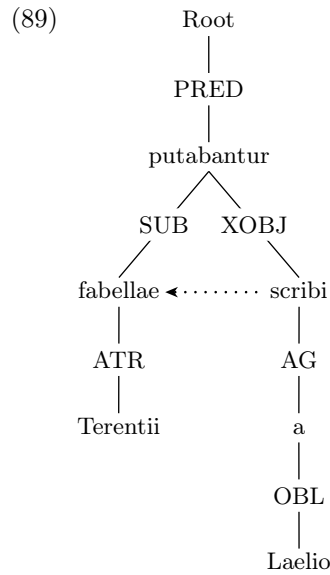
Terentii fabellae a Laelio scribi putabantur

XOBJs are not always infinitives; some verbs, like λήγω govern a participle which is then related to it via XOBJ. The coreference between the subject of the participle and the subject of the matrix verb is again marked via the slash notation. Also, perception words which take an accusative with participle construction are analysed as taking the accusative as an object and the participle as an XOBJ:

(90)
```
              Root
               |
              PRED
               |
              vidi
             /      \
          OBJ        XOBJ
          /            \
   puerum ◂······· currentem
```

Vidi puerum currentem

10.9.2   XADV

Conjunct (or predicative) participles are adverbials which modify the matrix verb, to which they are attached via the relation XADV:

(91)

```
                    Root
                     |
                   PRED
                     |
            ·····►exivit
            ·        /\
            ·    XADV  OBL
            ·     /      \
         exclamans        ab
             |            |
            ADV          OBL
             |            |
           voce          eo
             |
            ATR
             |
          magna
```
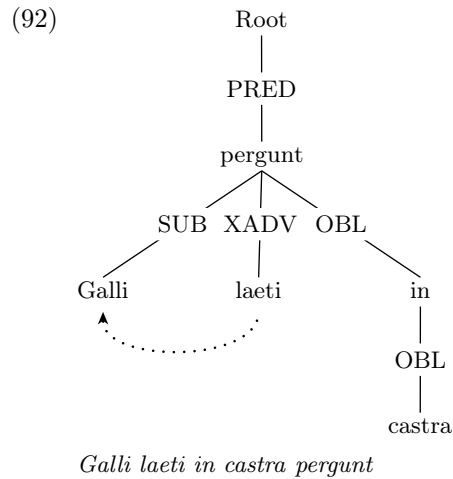
exclamans voce magna exivit ab eo
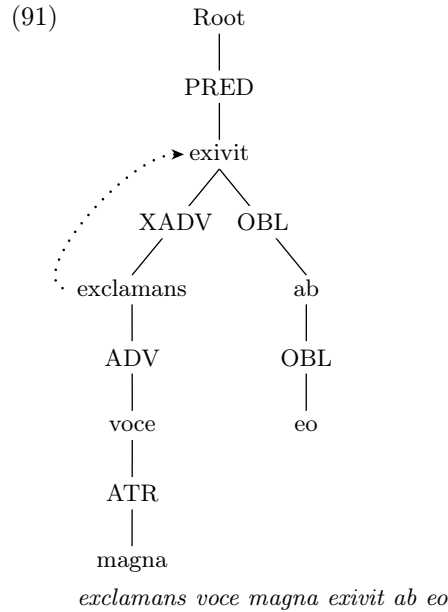
Like predicative participles, predicative adjectives are also given the tag XADV:

(92)

```
                 Root
                  |
                PRED
                  |
              pergunt
               /|\
          SUB XADV OBL
           /    |     \
        Galli  laeti   in
          ▲      ·      |
           ·····       OBL
                        |
                      castra
```

Galli laeti in castra pergunt

Participles and adjectives are given the tag ADV when they are predicative, ie. do not restrict the reference of a noun phrase but rather modify the main verb, ie. the above sentence means 'The Gauls proceeded happily into the camp.' whereas the meaning 'The happy Gauls proceeded into the camp.' would be represented as

(93)

```
                        Root
                         |
                        PRED
                       pergunt
                       /      \
                   SUB        OBL
                  Galli        in
                    |           |
                  ATR          OBL
                  laeti       castra
```
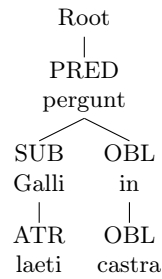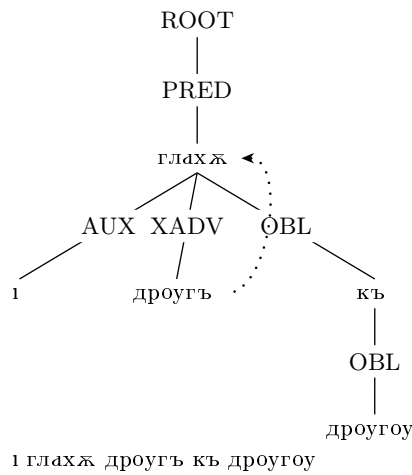
Galli laeti in castra pergunt

OCS reciprocal pronouns have two components, and prepositions come between them. The first component is in the nominative, and should be analysed as an XADV, to capture its apposition-like relationship to the subject. The second component, on the other hand, will be an OBJ, OBL or ADV daughter of the verb.

OCS reciprocals

(94)

```
                    ROOT
                     |
                    PRED
                     |
                  глахѫ  ◄.
                   /    \   :
               AUX  XADV  OBL
                |     |      \
                1   дроугъ    къ
                              |
                             OBL
                              |
                           дроугоу
```
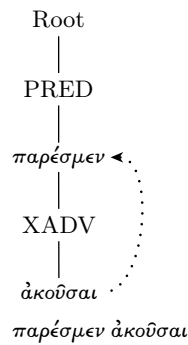
1 глахѫ дроугъ къ дроугоу

Morphologically, both components should be marked as reciprocal pronouns.

The infinitive of purpose is also an adverbial expression and should be assigned to the relation XADV :
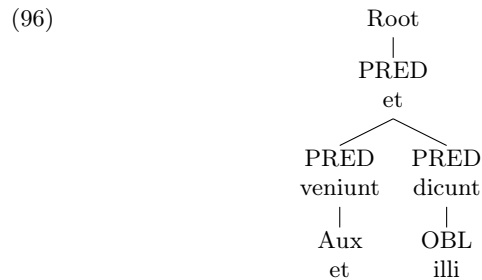
Infinitives of purpose

(95)

```
      Root
       |
      PRED
       |
   παρέσμεν ◄.
       |       :
     XADV      :
       |       :
    ἀκοῦσαι ·
```

παρέσμεν ἀκοῦσαι

OCS supines are also analysed as XADV.

10.10 Supertags

One supertag is relevant for embedded predications: REL, which is used whenever it is not possible to determine whether a relative clause is restrictive or not.

11 Coordination

Notice first that we do not recognize monopartite coordination. Thus, in the numerous cases in the New Testament where a sentence is introduced by a conjuction (*et* and others), this should not be treated as coordination, but the *et* should be attached to the sentence predicate via the relation Aux. In many sentences there is one introductory conjunction, which should be an aux under the first verb, and then a coordination of two verbs:

(96)
```
                    Root
                     |
                    PRED
                     et
                    /  \
              PRED       PRED
            veniunt      dicunt
               |           |
             Aux          OBL
              et          illi
```

Et veniunt et dicunt illi 'And he came and said to them'

We adopt a restrictive definition of conjunctions. Only items which can actually coordinate two words into a phrase. These are the words we recognize as conjunctions:

Gothic *aiþþau, ak, akei, alja, aþþan, jah, ni, nih*

Greek ἀλλά, εἴτε, ἤ, ἤτοι, καί, μηδέ, μήτε, οὐδέ, οὔτε, τέ,

Latin *an, atque, aut, et, neque, neu, que, ve, vel, sed*

OCS али, да, и, а, или, любо, ни, нъ

The slash arrow notation, which is used extensively in this section, is further explained and discussed in section 14, often with the same examples being used.

In analysing coordination, the first step is to ascertain what kind of elements are being conjoined: the conjuncts can be either constituents, multi-rooted elements, or sentences. **Types of coordination**

A constituent, in the sense of a dependency grammar, is a node together with all the nodes it dominates: for example, a noun with all its attributes and appositions is a constituent. In *Cicero consul coniurationem Catilinae detexit* (see **Constituent**

the tree on page 28), there are exactly five constituents: *consul*, *Cicero consul*, *Catilinae*, *coniurationem Catilinae* and *Cicero consul coniurationem Catilinae detexit*.[6] However, the latter constituent, which corresponds to a sentence, is treated differently from other sentences. By definition a constituent has a single root.

A multi-rooted element is a set if nodes which are not connected, ie. does not have a common mother. Consider *tradet frater fratrem in mortem* (example 131 = 107): *frater fratrem in mortem* has a common mother node, the verb, but this is not present in the string, so this set of nodes is as such multi-rooted. And still, it can be coordinated with another element, as in *tradet frater fratrem in mortem et pater filium*. **Multi-rooted elements**
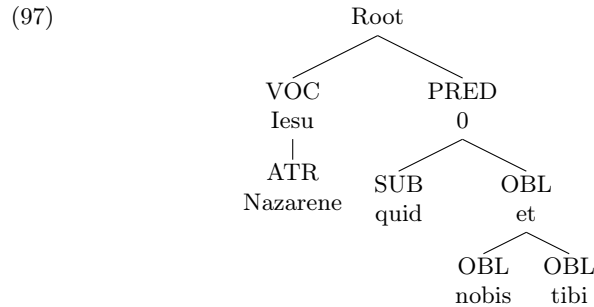
A sentence is a constituent dominated by a finite verb, or by an empty node which stands in for a verb, or by the infinitive in an Accusative with infinitive construction. **Sentences**

11.1 Coordination of constituents/single rooted elements

Coordination of constituents is the most straightforward case, especially when the constituents are single words. Consider the example *'quid nobis et tibi Iesu Nazarene?'*. *nobis* and *tibi* are conjoined by *et*. They are both OBLique arguments of a (elliptical) *esse*, but so is the whole phrase *nobis et tibi*. We therefore want to have both *nobis*, *tibi* and *nobis et tibi* as constituents which bear the OBL relation and we achieve this by having the conjunction dominating both *nobis* and *tibi* via the relation these would have had to the main verb if there was no coordination. The conjunction then inherits this relation and is attached to its head via the same relation that it bears to its daughter(s):

(97)

```
                    Root
                   /    \
               VOC        PRED
               Iesu         0
                |          /    \
               ATR       SUB     OBL
             Nazarene    quid     et
                                 /   \
                              OBL     OBL
                             nobis    tibi
```

Quid tibi et nobis, Iesu Nazarene?

If there are more than than two elements, all conjuncts are attached to the conjunction in the same way. Often there will also be more than one conjunction. In such cases, the first conjunction (not counting conjuntions which occur before the first conjunct!) should serve as a head of the coordinated phrase, and any further conjunctions should depend on the first one via the relation Aux

---

[6]In a phrase structure grammar, on the other hand, all words would be constituents, as would the VP (verb + object) *coniurationem Catilinae detexit*.

(98)

```
                              Root
                               |
                             PRED
                             scio
                               |
                             OBJ
                              et
        ┌──────────────┬───────┴───────┐
       OBJ            OBJ     Aux       OBJ
      opera         laborem   et       quia
        |                                |
       ATR                             PRED
       tua                             potes
                                      ┌──┴──┐
                                     Aux    OBJ
                                     non  sustinere
                                             |
                                            OBJ
                                           malos
```
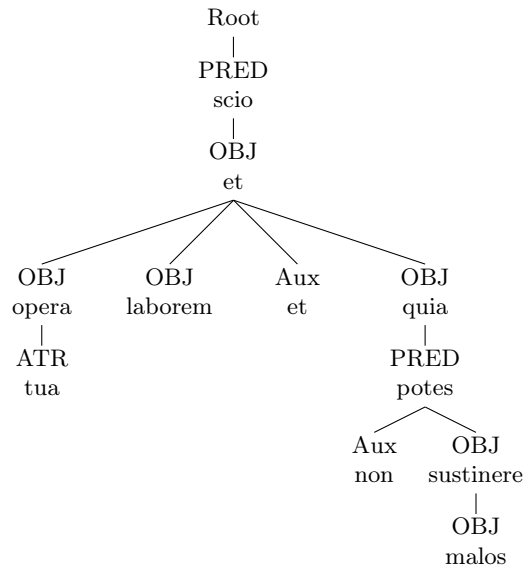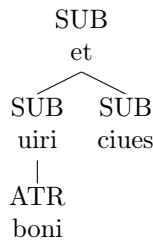
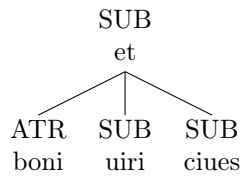*scio opera tua et quia non potes sustinere malos*

If there is no conjunction present we insert an empty node which behaves as a conjunction.

We use essentially the same analysis whenever the conjuncts are single rooted but share a subtree. Consider the string *boni viri et cives*. There are two possible analyses: the intended meaning can be 'good men and citizens (which are not necessarily good)' (tree (a) below)- in that case we have constituent coordination, since *viri* and its attribute *boni* is a constituent which is related to the constituent *cives*. But the meaning can also be 'good men and good citizens' (tree (b) below), in which case *boni* modifies both *viri* and *cives*. We represent the difference in the following way:

(99) (a)
```
           SUB
            et
          ┌─┴─┐
        SUB   SUB
        uiri  ciues
          |
        ATR
        boni
```
(b)
```
              SUB
               et
          ┌────┼────┐
        ATR   SUB   SUB
        boni  uiri  ciues
```

In this way, the adjective has correct scope, see section 15.7.

Notice that there is an alternative way to express shared attributes like this, namely through slash notation. The practice of putting shared elements on conjunctions is used when the coordinated elements are not finite verbs; for finite verbs sharing elements, the slash notation *must* be used.

In analysis of single root conjuncts, it is important to ensure that both con- **Identity of function**

joined elements have the same function, ie. should bear the same grammatical relation. SUBs can only be coordinated with SUBs, OBJs with OBJs etc. Only in this way is it possible to give the conjunction a correct function.

There are some exceptions to this, however. The XADV-relation, which can be coordinated with an ADV-element. In such cases the conjunction is given the relation XADV (and not ADV). This makes it possible to slash from the conjunction to the appropriate subject, and have the XADV inherit this slash.[7]

Coordination of ADV and XADV

Also, is allowed, and the resulting coordinator node should get the OBJ function. In a very few cases we also recognize coordination of COMP and OBL, and the coordinator node is labelled OBL.

Coordination of COMP and OBJ

If the relations of the two conjuncts are not identical, another form of conjunction must be used. Of course, beside the conjuncts themselves, the coordination can have 'superfluous' conjunctions bearing the relation Aux, as well as items that are shared between the two conjuncts.

Sometimes the principle of identical relation leads to slightly forced analyses:

(100)

καὶ διηγήσαντο αὐτοῖς οἱ ἰδόντες πῶς ἐγένετο τῷ δαιμονιζομένῳ καὶ περὶ τῶν χοίρων
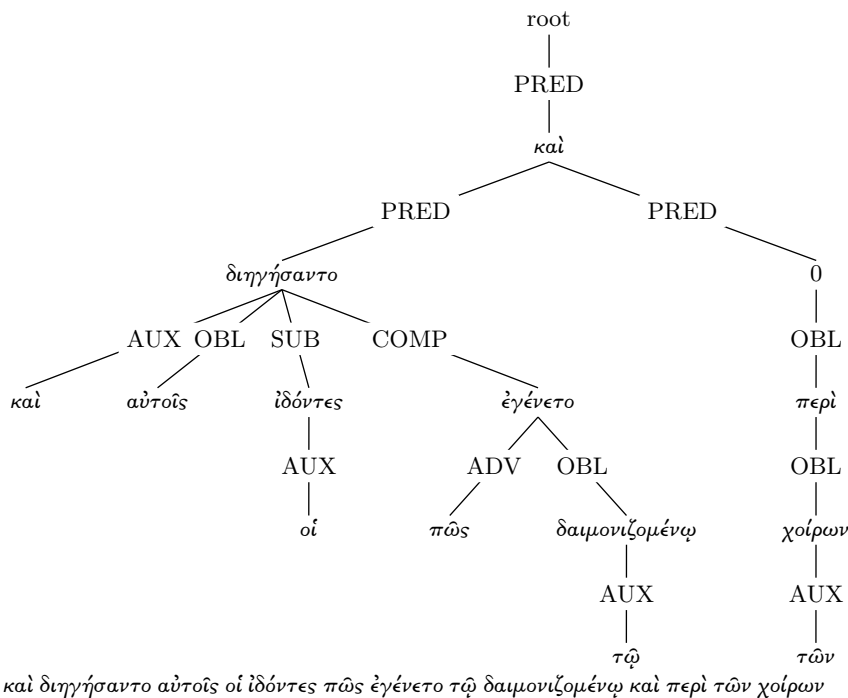
It would perhaps seem natural to take *πῶς ἐγένετο τῷ δαιμονιζομένῳ* and *περὶ τῶν χοίρων* as coordinated arguments of the main verb, but since their relations differ we cannot do this, and have to do a gapping analysis instead.

The principles described in this section are only applicable to **constituent** coordination. Whenever the two elements which each have more than one root

[7]Note that the relation between OBJ and XOBJ is different, since verbs subcategorize differently for these functions whereas ADV and XADV are not subcategorized functions.

are coordinated, the construction must be treated as described in section 11.3. One case which is not infrequent is the coordination of two object + object predicative structures. Even though we might like to conceive of an object + an object predicative as a single constituent, they have no common root except the governing verb in our model. We must therefore treat such coordinations as sentence coordinations, see example 106.

On the other hand, it *is* possible to coordinate two XOBJs:

(101)

```
                        Root
                         |
                        PRED
                         |
                        vidit
                       /      \
                   OBJ         XOBJ
                    /             \
           spiritum ◄·················· et
                                      /    \
                                  XOBJ      XOBJ
                                  /            \
                          descendentem      manentem
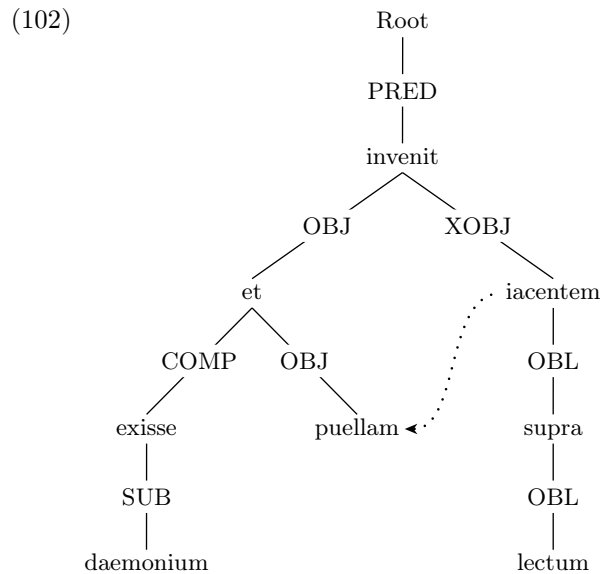```

*vidit spiritum descendentem et manentem*
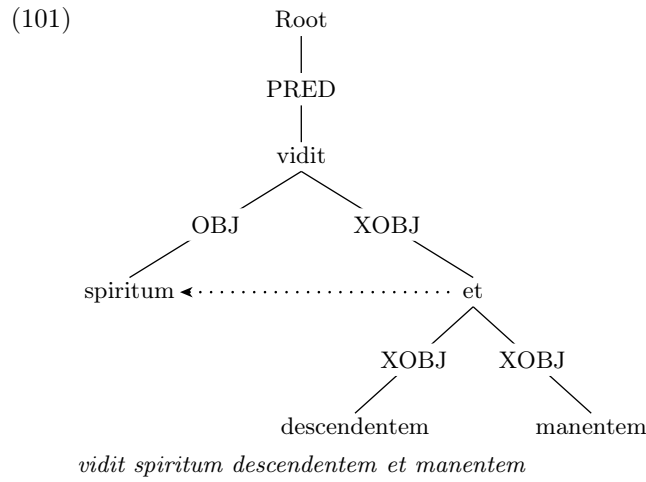
In this case, there should be a slash from the conjunction *et* to *spiritum*, see section 14.

It is also possible to coordinate a nominal object with an accusative with infinitive, even if the object takes a predicative complement:

(102)

```
                            Root
                             |
                            PRED
                             |
                           invenit
                          /        \
                      OBJ           XOBJ
                       |               \
                       et            ·· iacentem
                     /    \          ·      |
                COMP      OBJ        ·      OBL
                 /          \        ·       |
            exisse        puellam ◄··      supra
              |                              |
             SUB                            OBL
              |                              |
          daemonium                       lectum
```

57

invenit puellam iacentem supra lectum et daemonium exisse

In this case there should be a slash from *iacentem* to *puellam*. The example illustrates how our analysis relates to the semantics of the sentence in such cases: the subject of *invenit* preceives both the girl (*puellam*) and some proposition about here (that she is lying down, *iacentem*). The subject also perceives a proposition about the demon (*daemonium exisse*), but he does not directly perceive the demon, and therefore *daemonium*, unlike *puellam*, is not a direct object of *invenit*. Notice that the analysis involves coordination of COMP and OBJ, see section (15.28).

On the other hand, whenever there is a coordination of two groups of OBJ + XOBJ, we need to treat this as gapping because there is no common root for the OBJ + XOBJ group, see example (106).

11.2   Sentence coordination

Although technically it would be possible to model VP coordination[8] in the same way as other coordinations of single rooted conjuncts which share a subtree, we do not pursue this option. Instead we follow the spirit of dependency grammar and assume that every finite verb, as well as infinitives in accusative with infinitives, forms a sentence. This also ensures consistency in the analysis, since - given the liberal use of pro-drop subjects in ancient IE languages - it is often not possible to determine whether we have sentence coordination or VP coordination.

Consider *homo induebatur purpura et bysso et epulabatur cotidie*. There is no way of knowing whether the two conjuncts are *induebatur purpura et bysso* and *epulabatur cotidie*, with the subject belonging to both conjuncts, or rather *homo induebatur purpura et bysso* and *epulabatur cotidie* with a zero subject in the second conjunct. To avoid making such decisions, we treat all such cases as sentence coordination and mark shared arguments via the 'slash notation', see section 12. The representation is therefore:

---

[8]That is, the coordination fo two verbs with their arguments, but without the subject.

(103) Root *homo induebatur*

PRED

et

PRED PRED

induebatur epulabatur

OBL SUB ADV

et homo ◄ · · · · cotidie

OBL OBL

purpura bysso

purpura et bysso et epulabatur cotidie
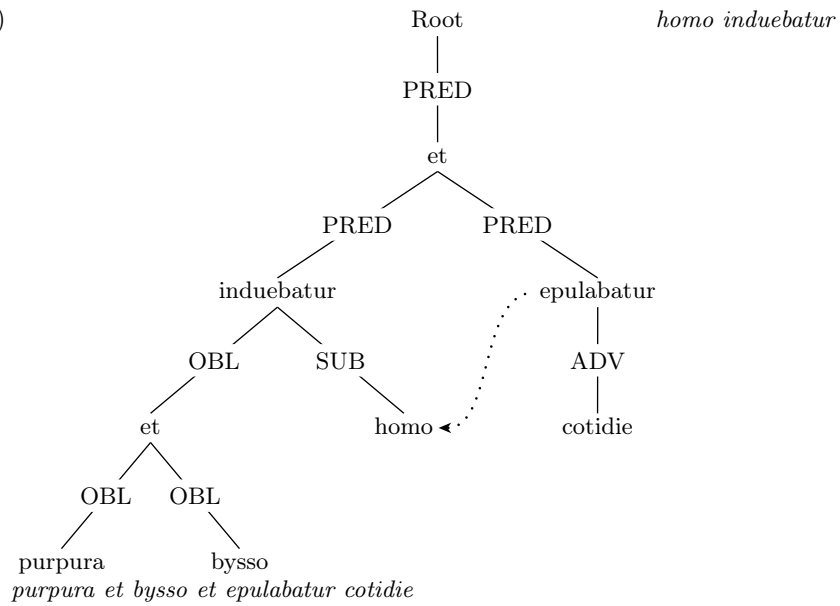
If there is more than one conjunction present, the first one which occurs between two conjuncts will dominate the coordinated elements, whereas subsequent conjunctions will be attached to the first one via the relation Aux. Any conjunction preceding the first conjunct will be an Aux on that first conjunct:

(104)

Root

PRED

et

PRED Aux PRED PRED

dicebant et ceciderunt adoraverunt

Aux SUB OBJ SUB

et animalia amen seniores ◄ · · · · ·

ATR

quattuor

et quattuor animalia dicebant amen et seniores ceciderunt et adoraverunt
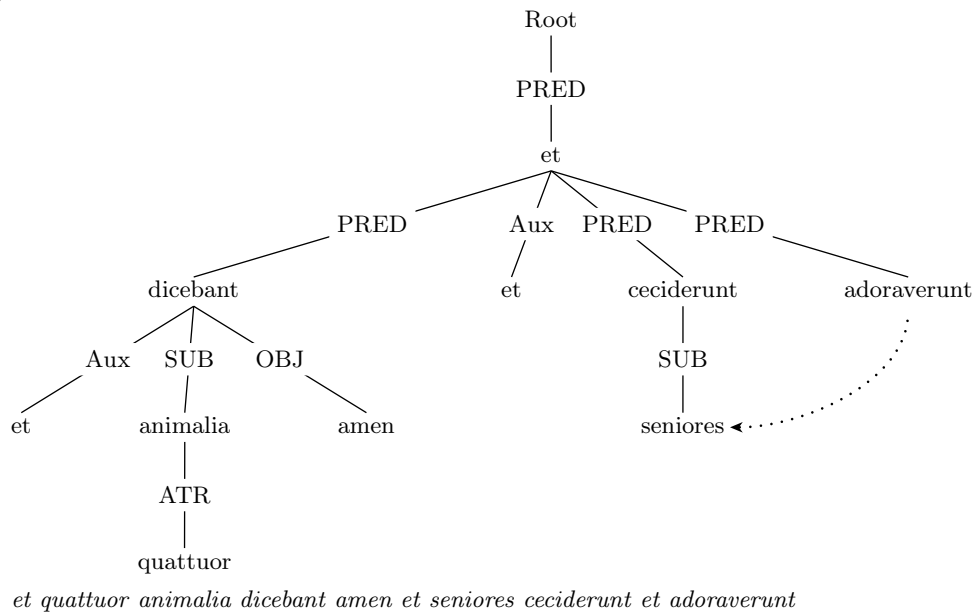
In subordinate clauses without a subjunction, the verbs do not bear the relation

PRED but corresponding to the funtion of the subordinate clause. Conjunct verbs are analysed as sentence coordination here too:

(105)
```
                    Root
                     |
                    PRED
                     |
                   audiat
                     |
                    SUB
                     |
                     et
                   /    \
                SUB      SUB
                /           \
             vivit         habet
               |             |
              SUB           OBJ
               |             |
              qui  ◄·····   aurem
```
qui uiuit et aurem habet, audiat
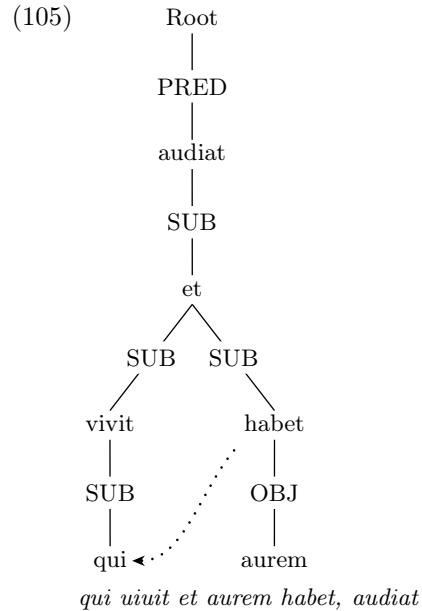
11.3   Conjunction of non-constituents/multi-rooted elements

The conjuncts do not always have a single root. Consider a sentence like 'John drank coffee and Peter beer.' The second conjunct here is 'Peter beer' which is not a constituent and does not have one root but two unconnected roots, 'Peter' bearing a SUB relation and 'beer' an OBJ relation. We must first create a common root for them. This will be an empty node functioning as a conjunction. The empty node and the sentence are then conjoined in a way similar to sentence coordination. Both are given the relation PRED, but the second conjunct lacks the verb and is therefore marked with a slash arrow towards the overt verb, ie. it is a kind of predication which shares the central element, the predicate, with the first conjunct):

(106)

```
                              Root
                               │
                             PRED
                               │
                              καὶ
                        ╱             ╲
                     PRED             PRED
                      │                 │
                    εἶδεν ◄·············· 0
                   ╱    ╲             ╱    ╲
                XOBJ    OBJ        OBJ    XOBJ
                 │       │          │       │
           σχιζομένους ····► οὐρανοὺς   πνεῦμα ◄····· καταβαῖνον
                              │          │             │
                             Aux        Aux           OBL
                              │          │             │
                            τοὺς         τὸ            εἰς
                                                       │
                                                      OBL
                                                       │
                                                     αὐτόν
```
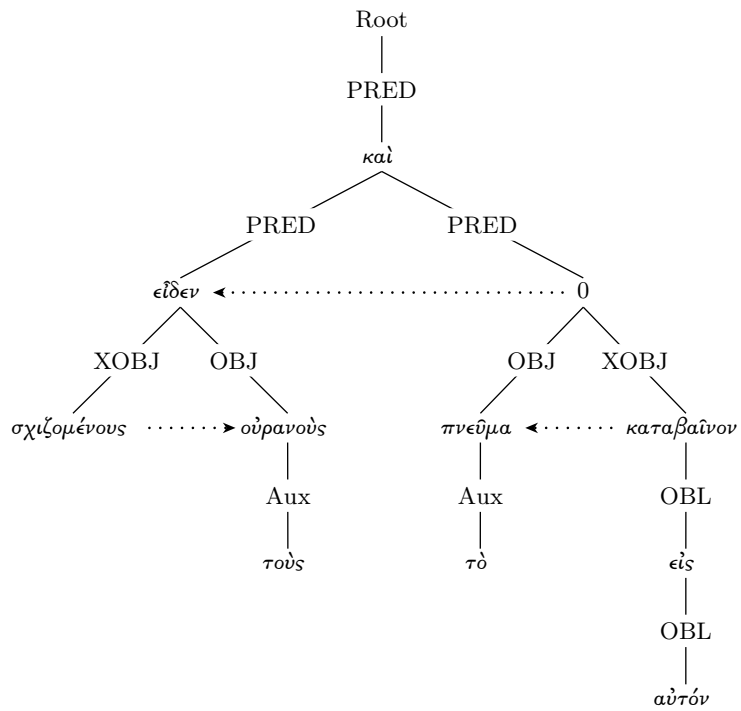
εἶδεν σχιζομένους τοὺς οὐρανοὺς καὶ τὸ πνεῦμα καταβαῖνον εἰς αὐτόν

(107)

```
                              Root
                               │
                             PRED
                               │
                              et
                        ╱             ╲
                     PRED             PRED
                      │                 │
                   tradet ◄············· 0
                 ╱   │   ╲             ╱   ╲
              SUB   OBJ   OBL        SUB   OBJ
               │     │     │          │     │
             frater fratrem in ◄····· pater filium
                            │
                           OBL
                            │
                          mortem
```

61
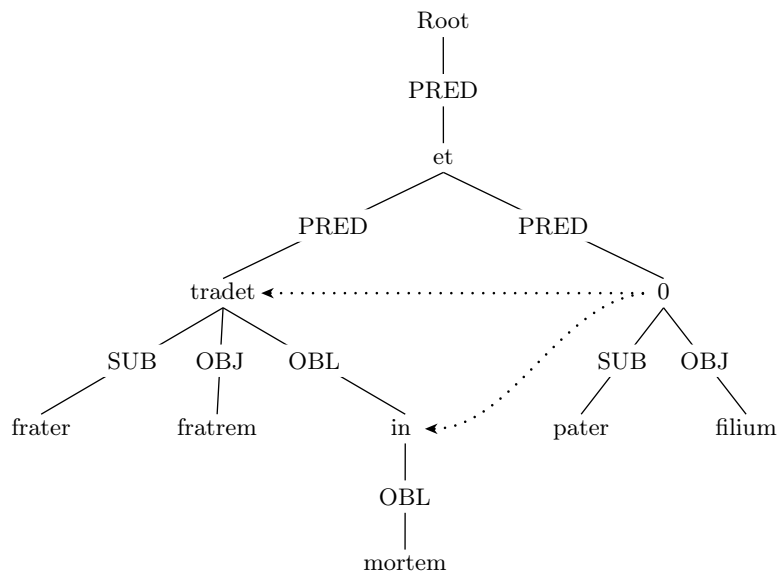
11.4   In which conjunct does an element belong?

It is sometimes not clear how the conjoined domains should be delimited and in which conjunct an element belongs. If the element is shared between the two conjuncts, the question is which dependency should be marked directly in the tree, and which one by a slash arrow. This does not affect the semantic interpretation of the sentence in any way, since the element is shared. For such questions, consult section 14.3.5.

It can happen that it is clear that an element belongs to only one conjunct, but it is unclear which one that is. In such cases, the choice will determine the interpretation. If in doubt, the annotator should consult standard translations. The principles in section 14.3.5 do not apply to such cases.
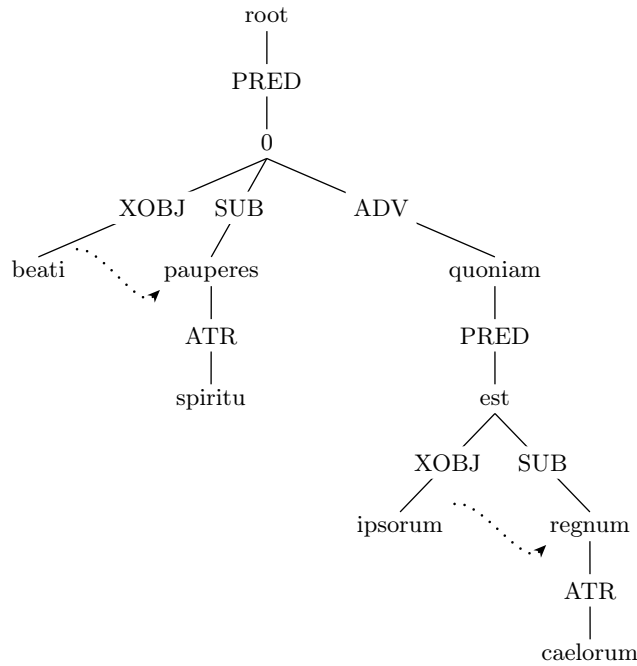
11.5   Other issues

Finally, it is important to distinguish the *conjunction et* 'and' from the *particle et* 'also'. This latter should be attached to the word it emphasises via the relation Aux. The same also holds for some other particles, as *neque* which can sometimes mean 'not even', in which case we do not split it into its constituent parts *ne + que*.

12   Gapping and ellipsis

12.1   Elided copulas

Since we take the verb to be the head of the entire sentence in our model, we always need a verb in the analysis. However, copular verbs are often elided. In such cases we insert an empty copula:
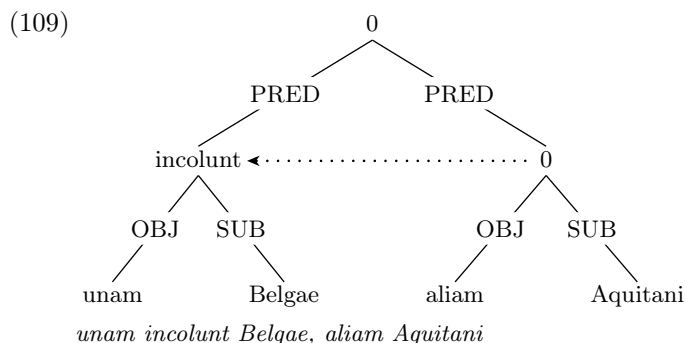
(108)

```
                        root
                         |
                       PRED
                         |
                         0
              ┌──────────┼──────────┐
           XOBJ  SUB            ADV
          beati ····· pauperes      quoniam
                         |              |
                        ATR           PRED
                         |              |
                      spiritu          est
                              ┌─────────┼────────┐
                            XOBJ       SUB
                          ipsorum ····· regnum
                                           |
                                          ATR
                                           |
                                        caelorum
```

beati pauperes spiritu quoniam ipsorum est regnum caelorum Blessed are the poor in spirit for theirs is the kingdom of heaven

Note that we have to assume an empty copula even in some cases where it is never overtly realised, as absolute ablatives with a predicative noun, see section 10.7

When the absent verb is not a copula, we will have to analyse this as gapping (see next section), ie. the structure should be attached to the sentence with which it shares a verb.

12.2   Gapping

Note that we do not mark ellipsis of nominal arguments as such, ie. we do not mark absent subjects in sentences like *currit* 'he runs'; nor do we mark absent objects in sentences like *interfecit* 'he killed him'. The only kind of ellipsis that we *do* mark is so-called gapping, ie. cases where shared material in a coordinated structure is left out in one or more of the conjuncts. Such conjuncts are treated as sentences, ie. we insert an empty verb which is given the relation PRED, and the shared elements are stored in a list, as explained in section 11.3. One further example will suffice:

(109)

```
                              0
                    PRED          PRED
              incolunt ◄·····················  0
               OBJ   SUB            OBJ   SUB
              unam      Belgae     aliam    Aquitani
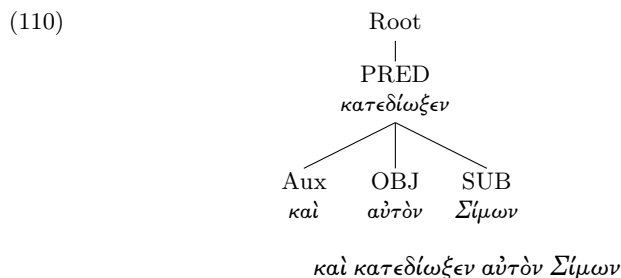```

*unam incolunt Belgae, aliam Aquitani*

Notice that for the purposes of this rule, we treat XADVs as coordinated with the main verbs, ie. it is allowed to use a slash arrow from a main verb towards an argument of an XADV participle, see example 130.

# 13   The article

## 13.1   Noun phrases

When a Greek noun phrase does not contain any articles, it is treated like NPs in other languages:

(110)

```
                    Root
                     |
                    PRED
                  κατεδίωξεν
             Aux   OBJ   SUB
             καὶ   αὐτὸν   Σίμων
```
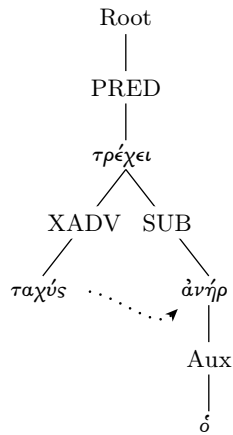
*καὶ κατεδίωξεν αὐτὸν Σίμων*

However, many Greek noun phrases contain one or more definite articles which can appear in various configurations, DAN, DNDA, NDA, ADN and DNA:[9] ὁ ἀγαθὸς ἀνήρ, ὁ ἀνήρ ὁ ἀγαθός, ἀνήρ ὁ ἀγαθός, ἀγαθός ὁ ἀνήρ and ὁ ἀνήρ ἀγαθός. In the last two onfigurations the adjective is normally considered predicative and not attributive, so there is a functional difference as well as a difference in word order. For our purposes, this means that adjectives in configurations like ἀγαθός ὁ ἀνήρ and ὁ ἀνήρ ἀγαθός should not be related to the noun via ATR, but rather to the verb via XADV. The article, on the other hand, is related to the noun via Aux. Note that since our syntax is dependency-based and not configurational, there is no difference between ταχύς ὁ ἀνήρ τρέχει and ὁ ἀνήρ ταχύς τρέχει:

**Possible configurations**

---

[9]D for the determiner/article, N for noun, A for adjective

(111)
```
                Root
                 |
               PRED
                 |
               τρέχει
               /   \
          XADV   SUB
           /   \
        ταχύς ·······→ ἀνήρ
                         |
                        Aux
                         |
                         ὁ
```
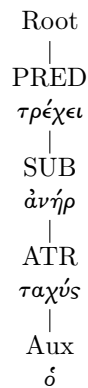
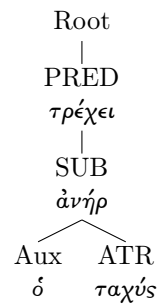$$= \text{ταχύς ὁ ἀνήρ τρέχει or ὁ ἀνήρ ταχύς τρέχει}$$

In other cases, where the adjective is attributive, we always attach the article to an item on the right: the noun, if this occurs to the right of the article (but not necessarily directly to the right); otherwise to the adjective. This means that the dependency structure distinguishes between ὁ ταχὺς ἀνήρ and ἀνήρ ὁ ταχύς:

(112) (a)
```
        Root
         |
        PRED
       τρέχει
         |
        SUB
        ἀνήρ
         |
        ATR
       ταχύς
         |
        Aux
         ὁ
```
(b)
```
        Root
         |
        PRED
       τρέχει
         |
        SUB
        ἀνήρ
       /   \
     Aux   ATR
      ὁ   ταχύς
```

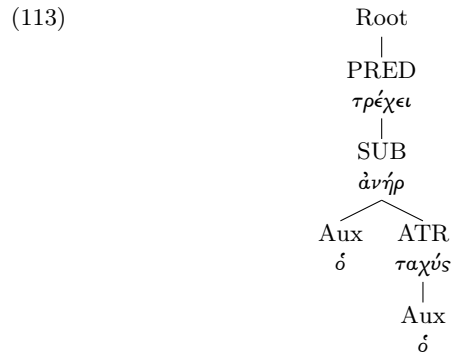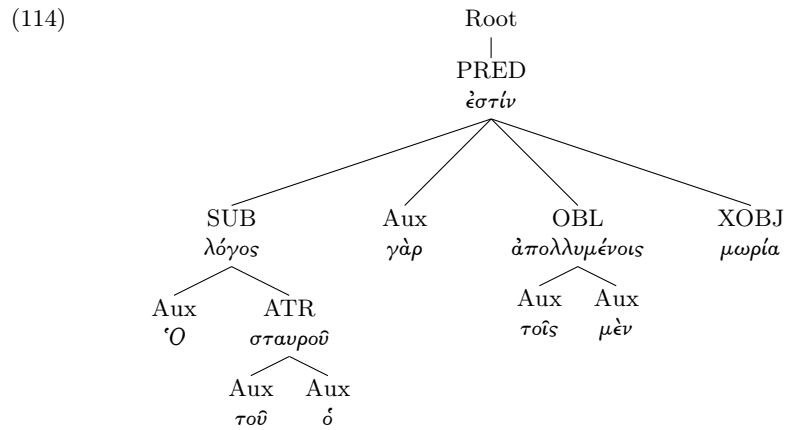ἀνήρ ὁ ταχύς τρέχει   ὁ ταχὺς ἀνήρ τρέχει

In the final case, there is an article preceding both the noun and the adjective and we attach each one to the element to their right. ὁ ἀνήρ ὁ ταχὺς τρέχει ends up as:

(113)

```
                    Root
                     |
                    PRED
                    τρέχει
                     |
                    SUB
                    ἀνήρ
                  /      \
               Aux       ATR
                ὁ        ταχύς
                           |
                          Aux
                           ὁ
```

However, the modifier in an NP need not be an adjective; it can be a genitive NP, an adverb etc. We attach the article to that element of the modifier which is related to the noun via ATR:

(114)

```
                              Root
                               |
                              PRED
                              ἐστίν
                 /         |         |         \
              SUB        Aux        OBL        XOBJ
             λόγος       γὰρ     ἀπολλυμένοις   μωρία
            /     \               /      \
         Aux      ATR          Aux      Aux
          Ὁ      σταυροῦ       τοῖς     μὲν
                /     \
             Aux      Aux
             τοῦ       ὁ
```

Ὁ λόγος γὰρ ὁ τοῦ σταυροῦ τοῖς μὲν ἀπολλυμένοις μωρία ἐστί
For the preaching of the cross is foolishness to them that perish.

Notice that in the structure of ὁ τοῦ σταυροῦ, both ὁ and τοῦ are Aux-daughters of σταυροῦ.

13.2 The 'article' on its own

Whenever the article appears on its own, without belonging to a noun or to some other element, as in the ὁ μέν … ὁ δέ construction, it is not an article at all, but should be marked as a pronoun in the morphological analysis and be analysed as a subject.

13.3 Articles without nouns

If an article appears with only an adjective or only a participle, it nominalizes this adjective/participle (for syntactic purposes, not the morphology!). This

means the adjective/participle will have a normal sentence-level function like SUB, OBJ or similar.

We use the same analysis even when the article appears with non-nominal categories like adverbs or preposition phrases. The adverb/preposition will be the head of the construction and given the appropriate relation, and the article will be a dependent of the adverb/preposition via Aux:

(115)

καὶ ἀκούσαντες οἱ παρ᾽ αὐτοῦ ἐξῆλθον κρατῆσαι αὐτόν
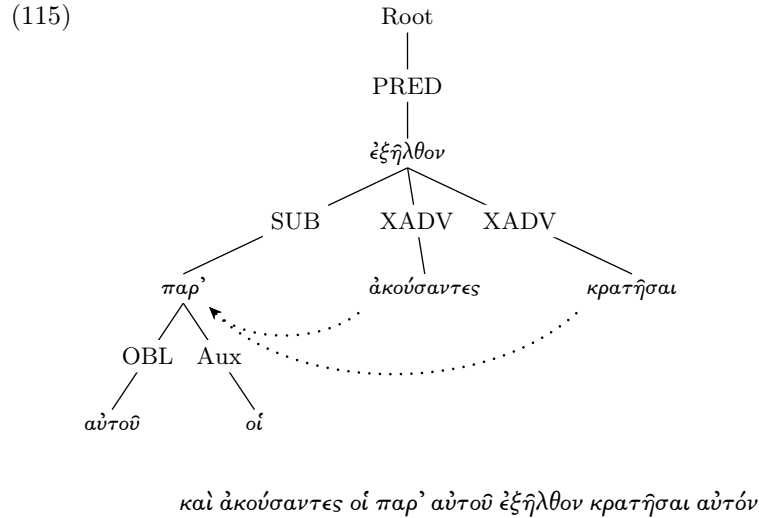
13.4 Articular infinitives in Greek

In articular infintive structures, the article should always depend on the infinitive via Aux, even if it is separated from its infinitive by other elements. Here is a rather complicated subtree showing the analysis of a preposition + to coordinated articular infinitives:

(116)

```
                                    Root
                                     |
                                    ADV
                                     |
                                    διὰ
                                     |
                                    OBL
                                     |
                                    καὶ
                                   /    \
                                OBL      OBL
                                 |        |
                            δεδέσθαι   διεσπάσθαι
                           /   |   \      /    \
                        SUB  ADV   ADV  AG    SUB
                         |    |     \    |      |
                       αὐτὸν πολλάκις  καὶ ὑπ'  ἀλύσεις
                                    /  |  \   |
                                 ADV ADV AUX OBL
                                  |   |   |   |
                               πέδαις ἀλύσεσιν τὸ αὐτοῦ
```
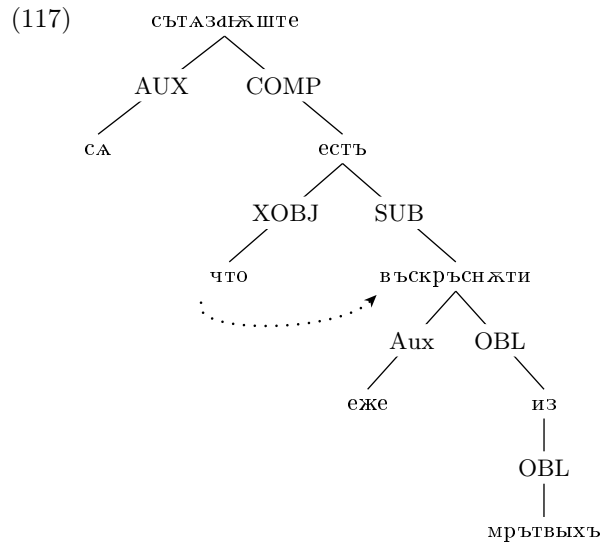
διὰ τὸ αὐτὸν πολλάκις πέδαις καὶ ἀλύσεσιν δεδέσθαι καὶ διεσπάσθαι ὑπ' αὐτοῦ τὰς
ἀλύσεις
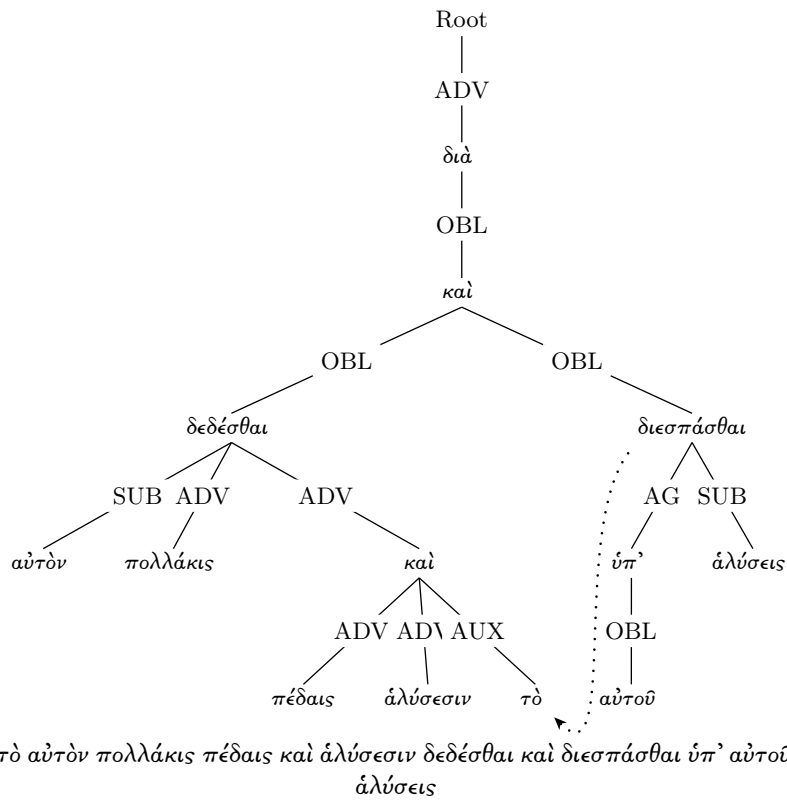
Notice that since articular infinitives are explicitly nominalized by an arti-
cle, they can have all kinds of functions, also SUBject, OBJect and OBLique,
whereas non-articular infinitives will normally be COMP in such situations.
This also holds for the Slavic 'mock article' еже, see section (13.5).

13.5   slavicmockarticle

Sometimes the Slavic translators seems to have used the relative pronoun иже to
render the Greek article. In particular this happens with infinitives. Although
we take иже as a demonstrative pronoun, we make it an *aux* on the infinitive
and let it nominalize the infinitive:

(117)

```
                    сътазднѫ ште
                  ╱         ╲
               AUX          COMP
               │              ╲
              сѧ             естъ
                           ╱      ╲
                       XOBJ       SUB
                        │           ╲
                      что        въскрѣснѫти
                       ⋰⋯⋯⋯⋯⋯↗      ╱      ╲
                                 Aux       OBL
                                  │          ╲
                                 еже         из
                                             │
                                            OBL
                                             │
                                          мрътвыхъ
```

This usage is also found with quotations, see 39165. However, there are also possible cases of the mock article nominalizing prepositions, although we currently analyse them as relative clauses with null copula. The only non-infinitive case we accept now is 40334.

14 Slash notation

14.1 Introduction

Slashes are used in our system to represent coreference relations within one dependency tree (which can of course contain several coordinated main clauses). Informally, the general principle is that a whenever an item 'needs' to have a dependent, but this dependent is already 'used' (ie. is a dependent of something else).
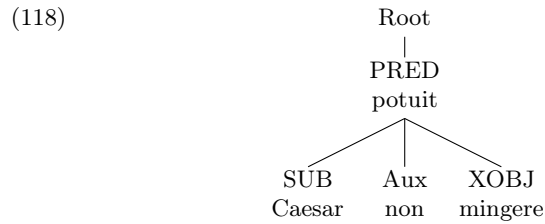
Interpretation

In other words, the meaning of a slash is *not* that the slasher node[10] is referentially identical to the slashee node. [11] Rather, the slash arrows should be conceived of as supplementary dependency relations: the slashee node is a dependent of the slasher. There is one exception to this principle, namely when the slasher is an empty node which bears the PRED-relation, see section 14.3.4.

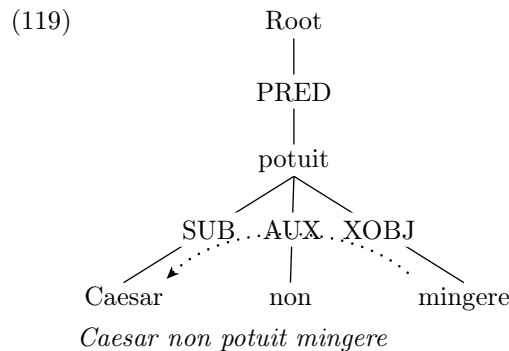To understand this general principle, consider the sentence *Caesar non potuit mingere.* The dependency tree is

---

[10]Ie. the node where the slash is inserted; the origin of the slash arrow in the visual representation of the dependency tree.

[11]Ie. the goal of the slash arrow in the visual representation of the dependency tree.

(118)

```
                    Root
                     |
                   PRED
                   potuit
              /      |      \
           SUB      Aux     XOBJ
          Caesar    non    mingere
```

Caesar is correctly designated as the subject of *posse*. However, Caesar is also the subject of *mingere* and to represent this fact, we put a slash arrow from *mingere* to *Caesar*:

(119)

```
                    Root
                     |
                   PRED
                     |
                   potuit
                  /   |   \
              SUB....AUX...XOBJ
             /        |         \
          Caesar     non      mingere
```

Caesar non potuit mingere

The interpretation of this notation is that the subject of *mingere* is coreferent with the subject of *posse*, which is *Caesar*.

We can distinguish two groups of uses of the slash notation, one associated with the 'open' functions XADV and XOBJ, and one associated with gapping and elliptical coordination.
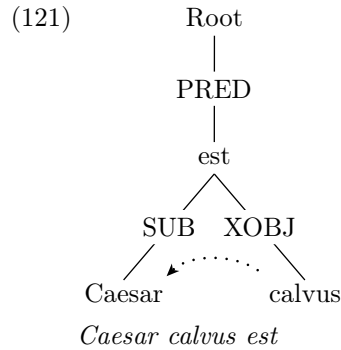
14.2   Open functions: XADV and XOBJ

The open functions XADV and XOBJ were introduced in section 10.9. By definition, they do not supply their own subject, but get a subject via coreference relations within the sentence. From the perspective of traditional grammar, it is perhaps not clear that nominal predicatives behave in the same manner, but consider the example *Caesar calvus est. Caesar* is the subject of *est*, and *calvus* is the predicative complement of *est*:

(120)

```
                   Root
                    |
                  PRED
                   est
                 /      \
             SUB        XOBJ
            Caesar      calvus
```
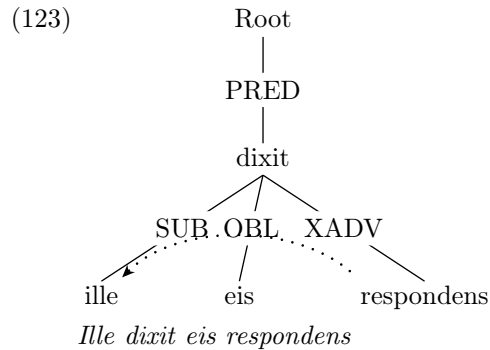
Caesar calvus est

70

However, we want to capture the fact that not only is *calvus* an argument of *est*, in the sense that *est* requires the presence of a predicative complement, *calvus* is also a predication about *Caesar*. In other words, *Caesar* is the subject of *calvus* and this is represented by a slash arrow from *calvus* to *Caesar*:

(121)

```
                Root
                 |
                PRED
                 |
                 est
               /     \
           SUB      XOBJ
            /  ⟵······      \
       Caesar            calvus
```
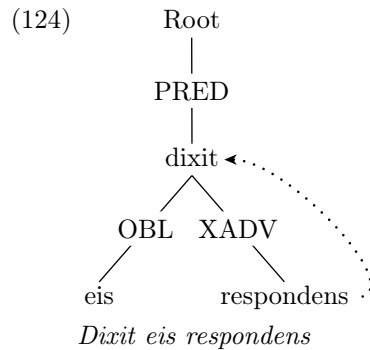
Caesar calvus est

The same holds for a traditional 'object predicative', as in *Romani Ciceronem consulem creaverunt*: *creare* requires three arguments, a subject, an object and a predicative. So, *consulem* is a XOBJ-dependent of *creaverunt*, and *Ciceronem* is a OBJ-dependent of *creaverunt*, but at the same time, *Ciceronem* is the subject of *consulem* and we capture this fact by a slash arrow from *consulem* to *Ciceronem*:

(122)

```
                    Root
                     |
                    PRED
                     |
                 creaverunt
               /      |      \
          SUB       OBJ      OBJ
          /          |    ⟵······   \
      Romani     Ciceronem        consulem
```

Romani Ciceronem consulem creaverunt
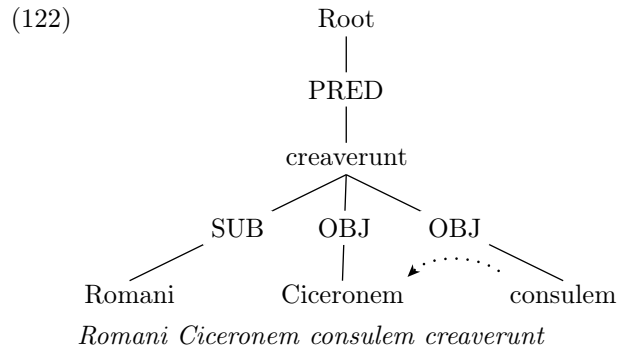
With the relation XADV, the facts are the same. Consider *ille respondens dixit eis*: *dixit* is the main verb, *ille* its subject and *eis* its oblique argument. *respondens* is an adverbial which modifies the main verb, contributing the extra information that the 'saying' was 'responding'. So *respondens* is an XADV-daughter of *dixit*, but we also want to express that *ille* is the subject of *respondens*:

71

(123)

```
                    Root
                     |
                    PRED
                     |
                    dixit
                   ╱  │  ╲
            SUB . OBL . . XADV
              ↙          ╲
           ille      eis    respondens
```

Ille dixit eis respondens

Now what if there was no overt subject in the sentence, ie. if the subject of *dixit* was pro-dropped and the sentence read *respondens dixit eis*? In this case, the subject is supplied by the finite verb itself, and the slash arrow is therefore directed towards the verb:

(124)

```
              Root
               |
              PRED
               |
              dixit ◂ . . . . . . . .
              ╱  ╲               ·
           OBL   XADV            ·
            |      ╲             ·
           eis    respondens ·
```

Dixit eis respondens

This means that **every node which is the daughter in an XOBJ or XADV relation should have a slash!** The interpretation of the slash arrow is always uniform, since it is always a *subject* dependent that these nodes lack. In other words, the slashee is aways the subject of the slasher. Therefore there should **never be more than one** outgoing slash from the daughter in an XOBJ or XADV relation, since this will create an ambiguity. In other words, it is not possible to mark that such an element shares an argument with another element of the sentence.
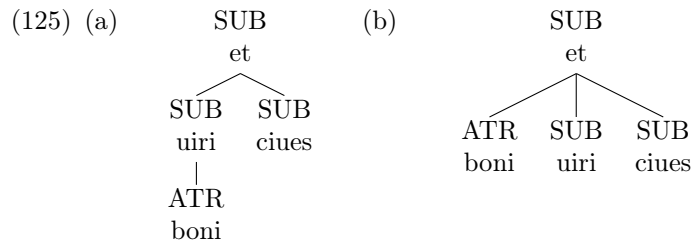
Number of outgoing slashes on XOBJs/XADVs

   Notice finally, that the slash arrow from an XOBJ or XADV node should always be local, ie. directed towards either the head verb or an element dominated by the head verb. This restriction is enforced by the annotation interface. However, the annotation interface does allow slashing into a dependent clause under the head verb. This should *only* be done when the argument in question is a shared argument of the main verb. Consider *tollens ergo membra Christi faciam membra meretricis*. By section 14.3.5, *membra Christi* is made an object of tollens. However it is also shared as an object by faciam. Therefore it is

72

licit to slash from the object predicative *membra meretricis* to *membra Christi.* However, in other cases, where the argument of the dependent clause is not directly shared by the main clause, we should not slash to it.

## 14.3   Slashes in gapping and coordination

14.3.1   Motivation

Slashes in coordinate *sentences* denote much of the same scoping information that is expressed in other ways in constituent coordination. In section 11.1 we represented adjectives scoping over two coordinated nouns as in (b) below:

(125) (a)
```
          SUB
           et
          /  \
      SUB     SUB
      uiri    ciues
        |
       ATR
       boni
```

(b)
```
          SUB
           et
        /   |   \
     ATR   SUB   SUB
     boni  uiri  ciues
```

Theoretically, it would be possible to represent *Caesar edit et bibit* by coordinating the two verbs under the conjunction and then attach *Caesar* as a SUB-daughter of the conjunction. But consider *quod Caesar edit et bibit bonum erat. et* would be a subject daughter of *erat*, and would dominate one object daughter, *quod*, and *three* subject daughters, namely *edit*, *bibit* - and *Caesar*. Although this ambiguity could be resolved through the morphological annotation, we prefer to avoid it entirely and represent the sentence as:

(126)

Root

|

PRED

|

erat

XOBJ   SUB

bonum   et

SUB   SUB

edit   bibit

OBJ   SUB
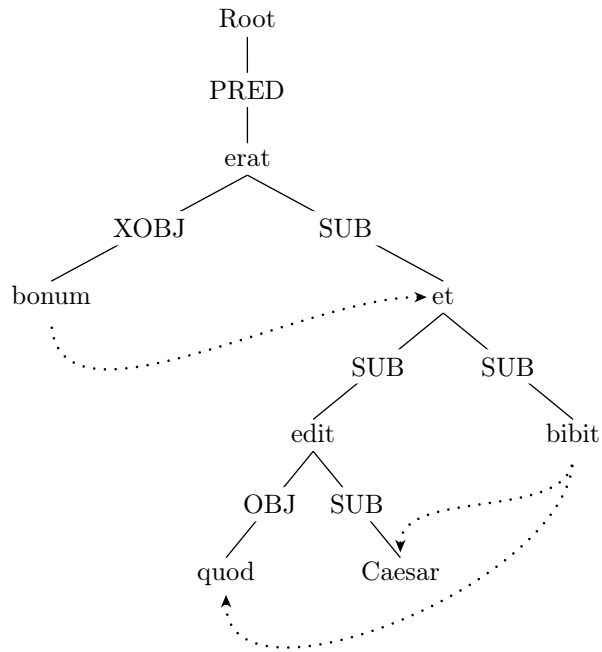
quod   Caesar

quod Caesar edit et bibit bonum erat

14.3.2   Slashes in sentence coordination

Whenever two coordinated sentences, or an XADV and its main verb, share **Shared** an element, be it a SUB, OBJ, XOBJ, OBL, AG or ADV, and this element is **arguments** overtly represented only once, the element should be attached to the verb to which it belongs in the surface string, and a slash arrow should be set from the other verb to the shared element.

Notice in particular that for the purposes of slashing, XADVs are considered **Treatment** to be on par with their governing verbs. It is allowed to slash from a main verb **of XADVs** to an argument of an XADV, but not to an argument of some dependent clause (XOBJ, accusative with infinitive or subordinate clause). But the opposite, a slash arrow from an XADV to an argument of the verb can only indicate the subject of the XADV, therefore XADVs can only have one outgoing slash arrow.

This kind of slashes should leave a verbal node and point towards the shared element. One should never use slashes between two verbs to indicate subject identity.

Consider again the first example from section 11.2:

(127)

```
                                    Root
                                     |
                                    PRED
                                     |
                                     et
                              ┌──────┴──────┐
                            PRED          PRED
                              |             |
                         induebatur    epulabatur
                          ┌────┴────┐         |
                        OBL       SUB        ADV
                         |          └──┐       |
                         et          homo ◄   cotidie
                      ┌──┴──┐              ⋰
                    OBL    OBL
                     |      |
                  purpura  bysso
```
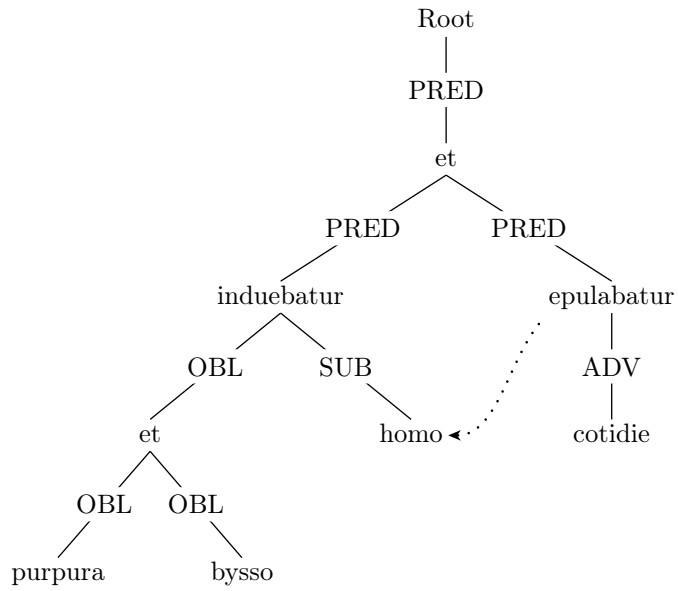
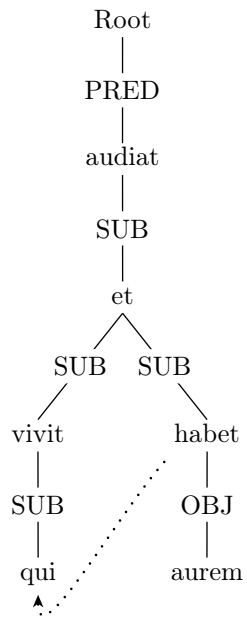*Homo indebatur purpura et bysso et epulabatur cotidie*

Now consider the example *qui uiuit et aurem habet, audiat*:

(128)

```
        Root
         |
        PRED
         |
       audiat
         |
        SUB
         |
         et
      ┌──┴──┐
    SUB    SUB
     |      |
   vivit  habet
     |      |
    SUB    OBJ
     |      |
    qui    aurem
     ▲⋰
```
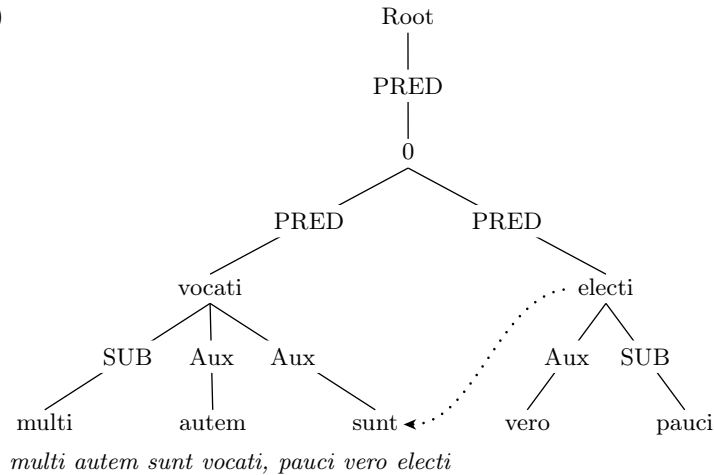
qui vivit et aurem habet, audiat

75

The shared element can also be an auxiliary verb:

(129)

```
                            Root
                             |
                           PRED
                             |
                             0
                      /            \
                   PRED            PRED
                   /                 \
               vocati      · · · · · electi
              /   |   \              /    \
          SUB   Aux   Aux         Aux    SUB
           |     |      \          /       \
         multi autem   sunt ◄···· vero     pauci
```

multi autem sunt vocati, pauci vero electi

When the slash notation is used in sentence coordination, it is important to assure that the grammatical relation between the slasher node and the slashee is identical to the relation of the slashee to its mother. In other words, if the slashee is a subject in its own clause, it should also be the subject of the slasher. If the unexpressed object of a coordinated verb is identical to the overt subject of another verb, we cannot express this coreference relation.This is so because, unlike the case of slash notation on open predications, where all slashees are subjects, there is no default relation type with which to interpret the slash relation. Instead, the slash relation 'inherits' the function of the slashee node. As long as this restriction is respected, there can be several slashes in a tree:
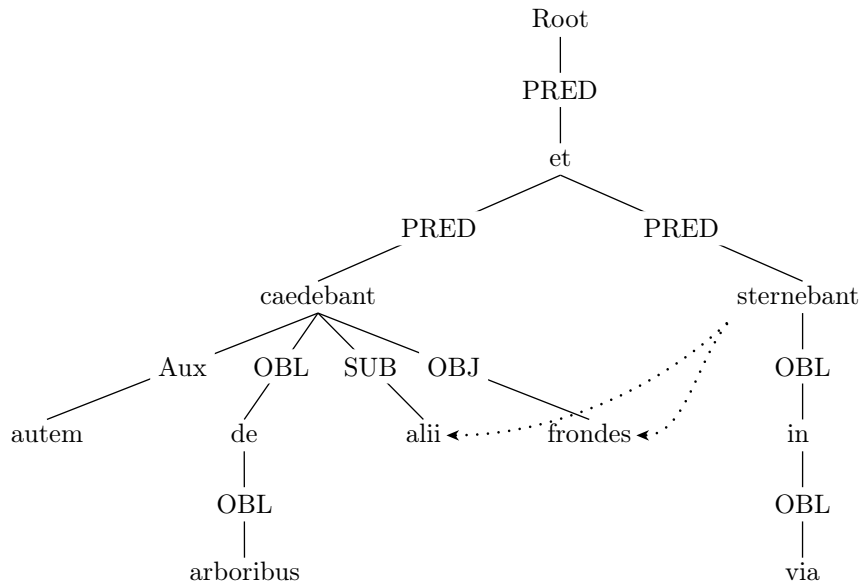
alii autem frondes de arboribus et sternebant in via

We can even have many more arrows:

(130)

καὶ λαβόντες αὐτὸν ἔδειραν καὶ ἀπέστειλαν κενόν
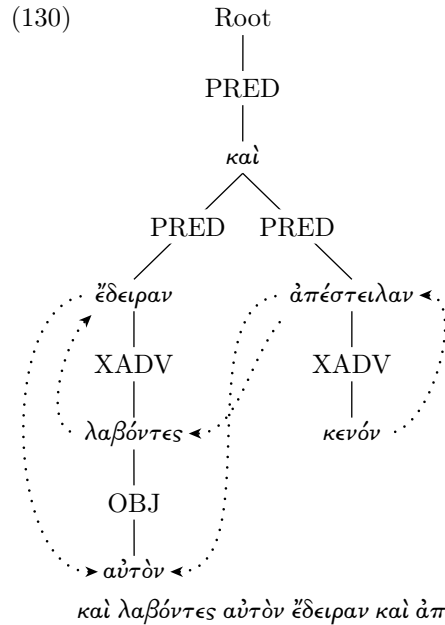
Here, αὐτὸν is taken to be the overt object of λαβόντες (for the general principle, see section 14.3.5). The arrows from ἔδειραν and ἀπέστειλαν indicate that these

verbs also have $a\mathring{v}\tau\grave{o}\nu$ as their object. The arrows from $\lambda a\beta\acute{o}\nu\tau\epsilon_S$ and $\kappa\epsilon\nu\acute{o}\nu$ to their respective dominating verbs $\breve{\epsilon}\delta\epsilon\iota\rho a\nu$ and $\mathring{a}\pi\acute{\epsilon}\sigma\tau\epsilon\iota\lambda a\nu$ indicate that the subjects of these XADVs is an unexpressed element which is 'supplied by the verb'. In the case of $\lambda a\beta\acute{o}\nu\tau\epsilon_S$, the subject of the participle is the unexpressed subject of the main verb; and in the case of $\kappa\epsilon\nu\acute{o}\nu$, the subject of the adjective is the object of the main verb. This object is expressed, but via a slash arrow: it is therefore not possible to slash directly from $\kappa\epsilon\nu\acute{o}\nu$ to its subject.
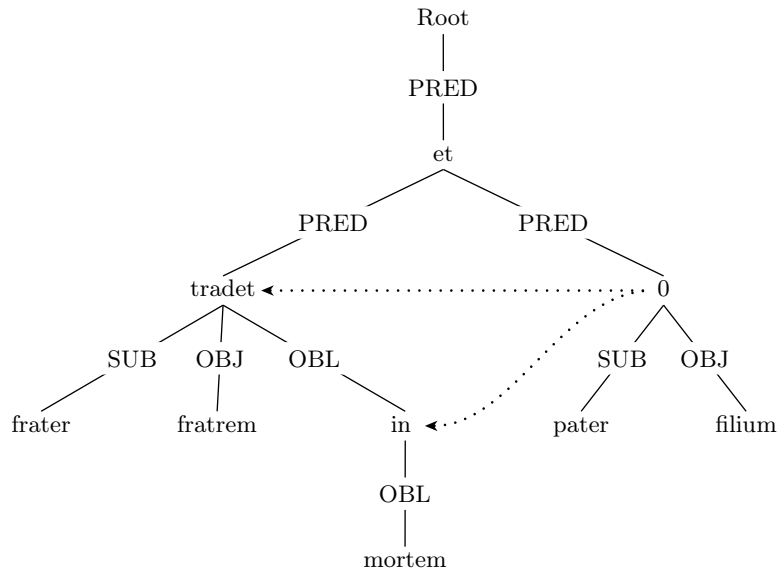
14.3.3 When is an adverbial shared?

While it is generally easy to decide when two coordinated verbs share their subject or another argument (object, oblique), it can be more difficult to decide whether an adverbial actually has scope over both conjuncts. Some are easy: for example, an adverbial conditional clause is shared between two main clauses if they both belong to the apodosis (if X, then Y and Z). Generally, time and space adverbials are the most tricky ones: note in particular that time adverbials should only be shared by two main clauses, if their events are cotemporal and not consecutive.

14.3.4 Slashes in gapping/multi-rooted conjuncts

Slashes in multi-rooted conjuncts behave exactly like slashes in sentence coordination, except that there is also a slash arrow from the empty node representing the verb, to the overt verb.[12] Consider *tradet frater fratrem in mortem et pater filium*:

---

[12]This slash arrow therefore has a different interpretation, meaning that the slasher node has the same meaning as the slashee node.

(131)

Root

PRED

et

PRED   PRED

tradet ◄································ 0

SUB OBJ OBL   SUB OBJ

frater   fratrem   in ◄······   pater   filium

OBL

mortem

tradet frater fratrem in mortem et pater filium

As here, it is often the case that other elements than the predicate are shared
between the conjuncts. The slash arrow from the empty node to *tradet* indicates
predicate identity whereas the arrow from the empty node to *in* indicates a
shared argument. As such it underlies the same restriction as other slashes in
sentence coordination: the slashee must have the same grammatical function in
both conjuncts.

14.3.5   In which conjunct does a shared element belong?

Our treatment of shared arguments raises the question where a shared argument
belongs in the tree. Sometimes an element can belong in several places. Why do
we put *in mortem* in the first conjunct in example 131? Or, in a more difficult
case, why does αὐτὸν belong to λαβόντες in example 130? The following section
provides some guidelines for making such decisions.

For argument sharing between coordinated elements we need to establish the **Delimitation**
domains of both conjuncts. If there is an overt conjunction, this will indicate **of conjunct**
the boundary between the two domains. Elements should therefore be made to **domains**
depend on the verb in their domain. In *tradet frater fratrem in mortem et pater
filium* we have the domains *tradet frater fratrem in morten* and *pater filium*,
so *in mortem* clearly depends on *tradet* and not on the empty node. If there
is no overt conjunction, we appeal to the principle of domain continuity: both
domains should, if possible, be continuous. If there are several possibilities,
ambiguous elements should belong to the first conjunct. For example, if there
was no *et* in example 131, both *tradet frater fratrem in mortem // pater filium*

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and *tradet frater fratrem // in mortem pater filium* would yield continuous domains, so we choose the first option, which attaches *in mortem* to the first conjunct.

In practice, then, the principles mean that the first element which belongs only to the second conjunct marks the start of the second conjunct domain.

When there is argument sharing between a clause and an XADV, the principles remain the same, but the application is slightly different. The subtree dominated by the subordinate verb or the subjunction should correspond to a continuous string in the sentence. In example 130, this means that αὐτὸν can be attached to λαβόντες; if αὐτὸν appeared to the right of ἔδειραν, such an attachment would not be possible. When several attachments are possible, we again choose to attach elements as early as possible in the surface string: this means that we prefer to attach αὐτὸν to λαβόντες. However, if the subject of ἔδειραν intervened between λαβόντες and αὐτὸν, such an attachment would *not* be possible, since λαβόντες αὐτὸν would no longer be a continuous domain.

Notice, finally, that the principles described in this section are only applicable whenever the sentence is ambiguous. Very often, case morphology will make it entirely clear where an element belongs, and in such cases, the morphology should not be overridden by considerations of domain continuity etc.

15 Other constructions

15.1 'all', 'self' and similar words

Words like 'all', 'self' and a few others are special: they are not really pronouns with anaphoric reference, but they behave very similarly when they determine non-overt ('pro-dropped') subjects as in:

> *At **illi** ut viderunt eum ambulantem super mare putaverunt fantasma esse et exclamaverunt.* **Omnes** *enim eum viderunt et conturbati sunt.*
> But as *they* saw him walk on the see, they thought it was a spirit and cried out. For *they all* saw him and were terrified

omnes does not refer to the same referent as *illi*, but rather quantifies over this referent. However, this is difficult to represent in a syntax without empty nominal elements. Instead we have opted to take *omnes* as the subject in such cases. The same holds for *ipse* 'self' in cases like the following:

(132)
```
                Root
                 |
                PRED
                dixit

        Aux     SUB     OBL
       autem    ipse    illis
```
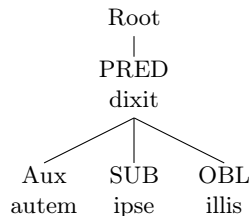
ipse autem dixit illis 'He himself told them'

With *ipse* there is the added complication, however, that *ipse* (just like Greek αὐτός which it translates) sometimes means 'self' and sometimes is used as a pure anaphoric pronoun 'he'. This difference in meaning (which is necessarily subjective) is rendered in the morphology: when the meaning is 'self' we make it a demonstrative pronoun, and when it is 'he' we make it a personal pronoun.

In effect, this means that we take intensifiers and quantifiers as subjects when they really are not. This leads to some complications whenever the intensifier/quantifier appears in an open predication, i.e. a structure which should not have a subject:

(133)
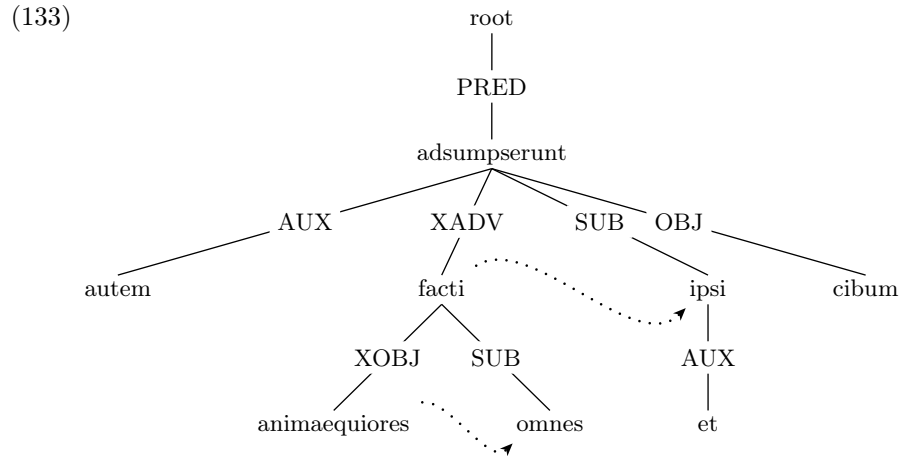
When interpreting such structures, it should be born in mind that 'self' and 'all' are not normal subjects.

15.2   Headedness of compound verb forms

In constructions like copula + some infinite form (*amatus est*, ἦν διδάσκων) or modal auxiliary + some infinite form, two analyses are in principle possible: a biclausal one where the finite copula/auxiliary is the head and the lexical verb is an XOBJ dependent; or a monoclausal analysis where the infinite lexical verb is the head, and the copula/auxiliary verb is an Aux-dependent.

The two analyses correspond to different degrees of grammaticalization of the constructions. We have decided to treat the following cases as monoclausal ones (ie. the finite verb is an aux and not the head):

- Latin passives, future infinitives and the periphrastic conjugation

- Slavic periphrastic perfects (l-participles)

- The Greek periphrastic passive perfect

In all other cases, we take the finite verb to be the main PRED. In such cases, temporal and local adverbials should be dependents on the finite verbs, whereas arguments and event modifiers like instrumentals should depend on lexical verb.

15.3 Comparison

Ablatives of comparison in Latin, and the similar genitives of comparison in
Greek and Old Church Slavonic, are dependent on the comparative adjective
via OBL:

(134)
```
                        Root
                         |
                        PRED
                        sunt
                   /      |      \
              ADV       XOBJ       SUB
             nobis     clariora   consilia
                         |         /    \
                        OBL      ATR    ATR
                        luce     luce   omnia
```
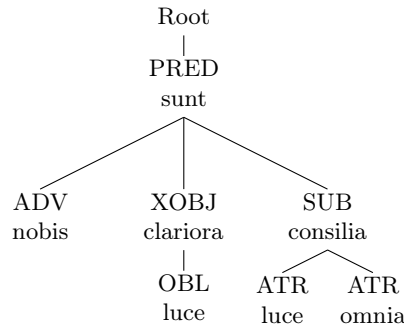
luce sunt clariora nobis tua consilia omnia 'Your plans are clearer than light
for us'

When *quam* is used it should depend on the comparative adjective via OBL,
and the second member should depend on *quam* via the same relation as the
other item compared:

(135)
```
                 Root
                  |
                 PRED
                  est
                 /    \
             XOBJ     SUB
            laetior  puella
               |
             OBL
            quam
               |
             SUB
            puer
```
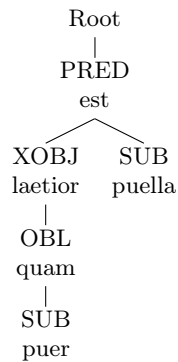
puella est laetior quam puer

OCS неже behaves in the same way, and should have the same analysis.

Other expressions of comparison are analysed in the same way: *nihil aliud
nisi, idem qui, similis ac* etc. Here is an example:

(136)

```
                    Root
                     |
                   PRED
                    scio
                     |
                    OBJ
                  sensisse
                 /        \
              SUBJ        OBJ
            Caesarem     eadem
                        /      \
                     AUX       OBL
                     non      quae
                               |
                             SUBJ
                               me
```
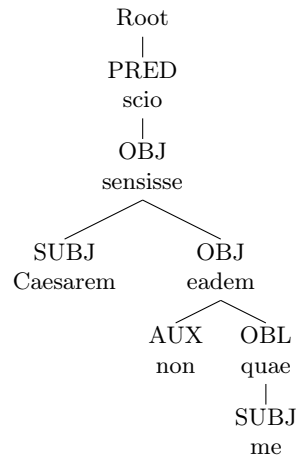
Caesarem non eadem quae me sensisse scio

We use the same principle for comparative adverbs.

(137)

```
                    Root
                     |
                   PRED
                    amat
              /       |        \
            SUB      OBJ       ADV
          Brutus  Caesarem    plus
                               |
                              OBL
                             quam
                               |
                              OBJ
                            Augustum
```
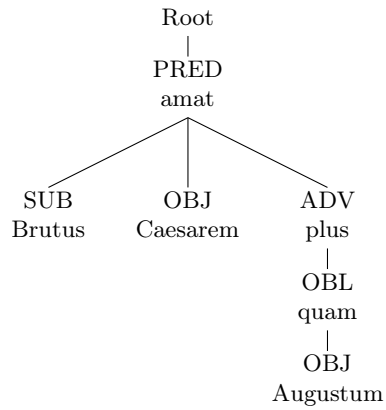
Brutus amat Caesarem plus quam Augustum

(138)

```
                    Root
                     |
                   PRED
                    amat
              /       |        \
            SUB      OBJ       ADV
          Brutus  Caesarem    plus
                               |
                              OBL
                             quam
                               |
                              SUB
                            Augustus
```

This approach is tantamount to treating *quam* (as well as *nisi* in *nihil aliud nisi*, *qui* in *idem qui*, *ac* in *similis ac*) as introducing a sentence.

Here is another example where *nisi* modifies an interrogative pronoun:

(139)
```
                Root
                 |
                PRED
                 |
               potest
                /\
           SUB    XOBJ
            /           \
     quis ◄········· dimittere
          |               |
         ATR             OBJ
          |               |
         nisi          peccata
          |
         SUB
          |
        Deus
          |
        APOS
          |
        solus
```

quis potest dimittere peccata nisi solus Deus

'Who but God alone can forgive sins'
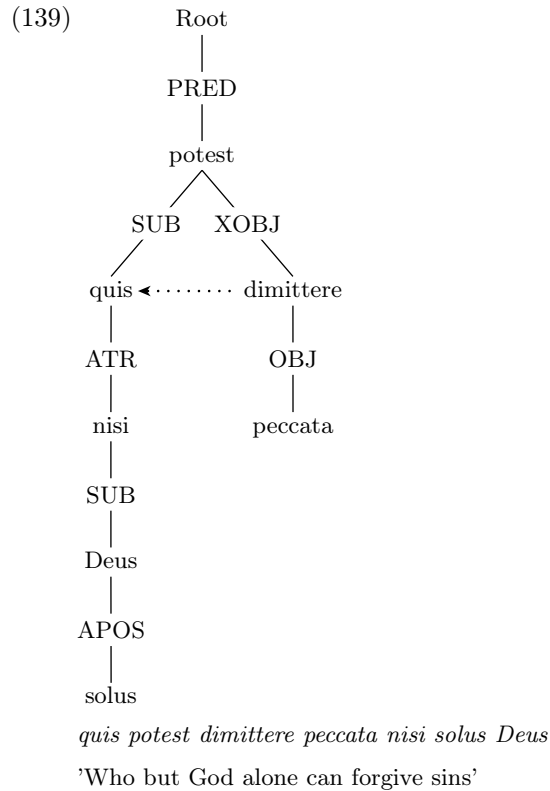
If there is no 'antecedent' to *nisi*, it will bear a sentence-level function:

(140)

Root

PRED

manducavit

OBJ

panes

ATR

licet

XOBJ OBL

manducare ··········▶ nisi

OBJ

quos

OBL
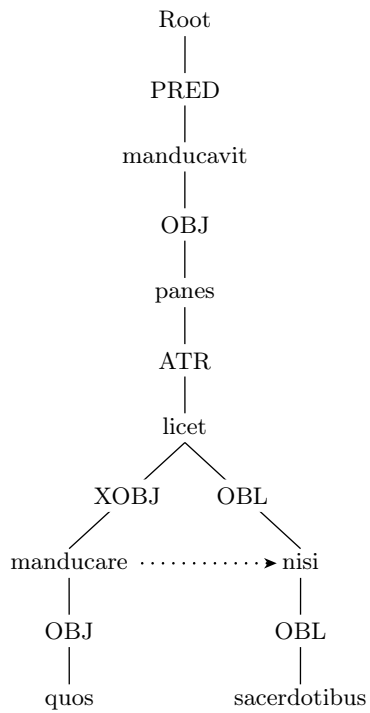
sacerdotibus

manducavit panes quos non licet manducare nisi sacerdotibus

Words that mean 'as' (such as Greek ὡς, OCSЬко, Latin *velut* and Gothic *swa*) are treated in the same way. On the sentence level they are often adverbs (as in the following example) or predicative complements (142):

(141)

root

PRED
intrabit

SUB
receperit

Aux
non

OBL
in

OBL
illud

SUB
quisque

Aux
non

ADV
velut

OBJ
regnum

SUB
parvulus

ATR
Dei

(142)

```
                           root
                            |
                          PRED
                            |
                          erant
                         /      \
                     PRED        XOBJ
                      /            \
                 homines          sicut
                      ⬉⋯⋯⋯⋯⋯⋯       |
                                    SUB
                                     |
                                    oves
                                     |
                                    ATR
                                     |
                                  habentes
                                   /    \
                                 Aux    OBJ
                                 /        \
                               non      pastorem
```

Homines erant sicut oves non habentes pastorem
'People are like sheep without a shepherd'

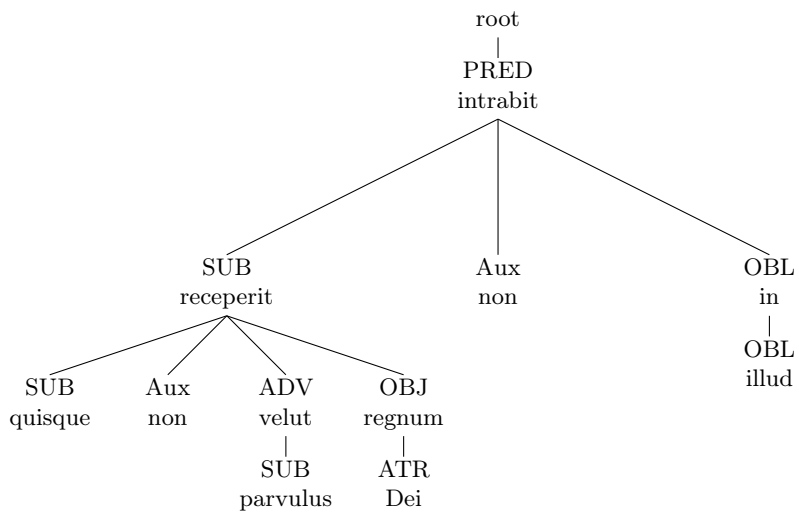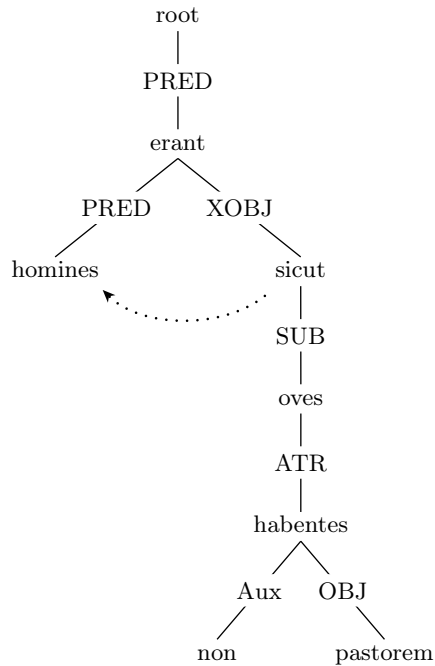Note that the adverbs of comparison are often used to introduce object predicatives as well. Here the comparison analysis does not work, since the implicit verb of the predicative is the copula, not the main verb. E.g. *fac me sicut unum de mercennariis tuis* does not mean 'Make me as (you make) one of your hirelings', but rather 'Make me be one of your hirelings'.

15.4   Verbs of preference

Latin in particular has some 'comparative' verbs, like *malo* 'prefer something to something', or *expedit* 'it is better that something than that something'. The first sentence in the comparison is assigned the COMP or XOBJ relation, depending on whether it has an internal subject or not. The second element is typically introduced by (the adverb) *quam*, which becomes an OBL under *malo*, *expedit*, and invariably introduces a COMP, even if the first comparandum is an XOBJ, see 53182.

15.5   'Approximately'

The idea 'approximately' is often expressed by words like ὡς and ꙗко, which are then taken as aux'es. In Slavic this is always an *aux* on the numeral, if there is one, whereas in the other languages we try to put it on the the head of the phrase being modified:

(143) (a)

```
        ἐτῶν
        /  \
      Aux   ATR
      ὡς   δώδεκα
```

(b)

```
        лѣтоу
          |
         ATR
        дъвою
        /    \
      Aux    ATR
      ѣко     нд
               |
              OBL
             десѧте
```
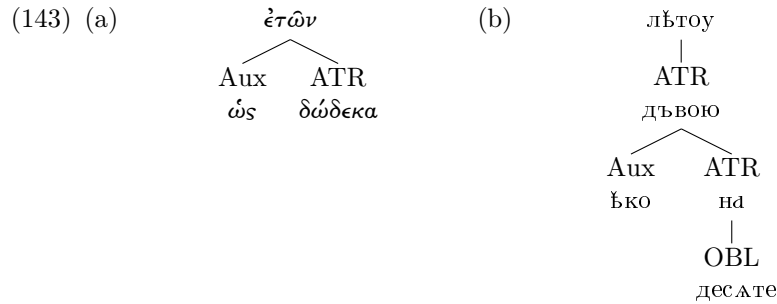
The situation in Gothic and Latin is unresolved.

15.6   Coordination through particles in Greek

We adopt a very restrictive view of conjunctions: basically only words that can conjoin two words into a phrase, or two sentences into one, count as conjunctions. Particles like μὲν ... δὲ ... are not treated as conjunctions: instead we treat this as asyndetic coordination, using an empty conjunction and leaving μὲν and δὲ as Aux-dependents on their respective conjuncts.

In a sequence τε ... καί we treat καί as the head and τε as an auxiliary particle.

15.7   Scope

Scope is relevant to many constructions. An adjective can modify one or more nouns, and is then said to have scope over these nouns. A genitive can be dependent upon (and thereby for example modify) one or more nouns. The negation can negate one particular element in a sentence, or several, or the whole sentence - these elements are said to be in the scope of the negation. Emphasizing particles can take scope of one or more words.

We represent scope via the attachment site of scoping items. Scoping items should be placed so as to be dependent on the item in their scope. By default, they also take scope over all elements dominated by their mother node; so a negation dependent on the verb negates the whole sentence. This means that if we want an item to take scope over two coordinated elements, it should be made to depend on the conjunction. However, since the status of the Greek definite article regarding whether it can take scope over two coordinated proper nouns is completely unclear, we currently make it a dependent of the following noun only - in other words, the article is never attached to a conjunction.

If e.g. a negation has scope over only one of two coordinated elements, it must be attached to that element. Note that this holds even in cases of double negation, i.e. a negation may be an AUX on a negative pronoun. In OCS, consequently, a pronoun may end up having both a negative particle and a negation as AUXes, such as in 36606, where the negation has scope over only one of two coordinated OBJs.

Notice that we do take *ni manna* as grammaticalized in the meaning 'noone', which means that *ni* is taken a dependent on *manna*.

It is often difficult to determine the correct scope of time and space adverbials, especially when they co-occur with participles or subordinate clauses at the beginning of the sentence.

(144)

```
                            root
                             |
                           PRED
                             |
                         introivit
                        /     |     \
              XADV · · · AUX       OBL
                /    ·  ·   |         \
          surgens       autem         in
             |                         |
            OBL                       OBL
             |                         |
            de                       domum
             |                         |
            OBL                       ATR
             |                         |
         synagoga                   Simonis
```
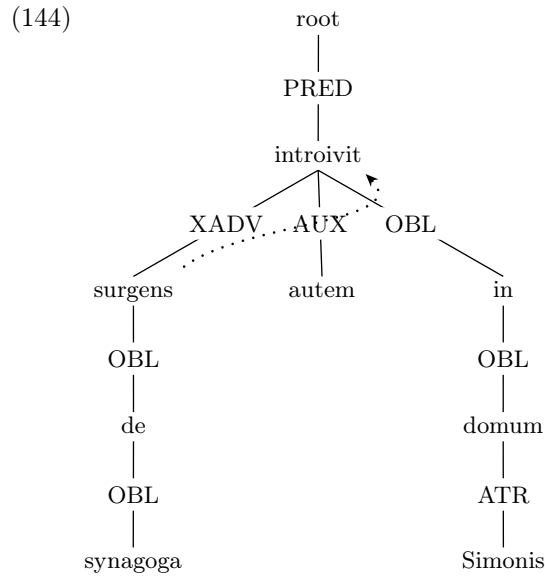
surgens autem de synagoga introivit in domum Simonis
'And having risen out of the synagogue, he entered into the house of Simon'

autem is here made dependent on the main verb, but *de synagoga* on *surgens*: Our guiding principles is to mark such adverbials as ADVs on the main PRED unless their scope is clearly only over a participle (XADV) or a subordinate clause. In this way, the default solution is to give time and space adverbials maximal scope within the sentence.

Note however that scope over coordinated verbs/sentences is treated in a fundamentally different way. An item which is the subject of two coordinated verbs can *not* be made dependent on the conjunction. Instead, it should depend on the verb in the sentence where it appears (see section 14.3.5 for delimitation of the domains) and have an incoming slash arrow from the verb in the second conjunct.

15.8 Impersonal verbs

Impersonal verbs are defined by their inability to take a subject. Therefore, verbs like *licet, pudet* ἐξεστιν etc. should never take a subject dependent. Infinitives with such verbs should be considered COMPs or XOBJs, depending on

whether an accusative subject would be possible or not. For example *licet* takes a dative and an infinitive. This becomes:

(145)

```
                Root
                 |
                PRED
                 |
                licet
                /   \
             OBL    XOBJ
              /        \
           viro ◄······· dimittere
                             |
                            OBJ
                             |
                          uxorem
```

licet viro dimittere uxorem
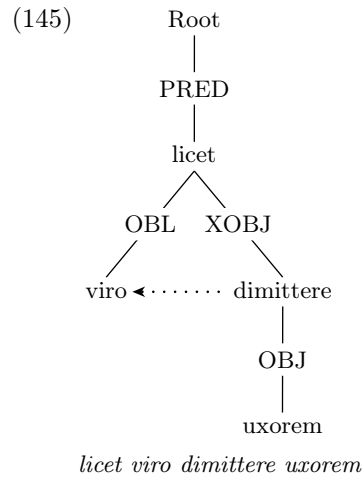
This means that whenever no dative is present, there should be a slash to the main verb:

(146)

```
     Root
      |
     PRED
      |
   oportet ◄.
      |       :
    XOBJ      :
      |      :
    fieri ··˙
```

oportet fieri
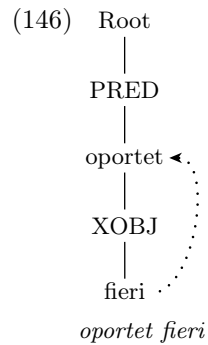
On the other hand, such verbs can often also be constructed with an Accusative with infinitive, and in such cases, they must be COMPs:

(147)
```
                           Root
                            |
                          PRED
                         oportet
                            |
                          COMP
                        praedicari
                        /        \
                    SUB           ADV
                evangelium         in
                                   |
                                  OBL
                                 gentes
                                   |
                                  ATR
                                 omnes
```
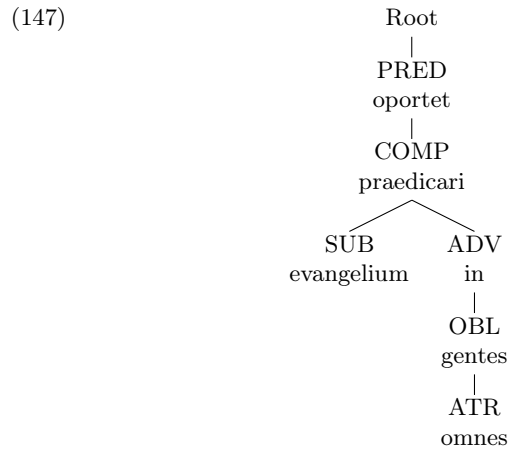
in omnes gentes oportet praedicari evangelium

Verbs which are sometimes constructed with an AcI and sometimes with a pure infintive are ambiguous whenever there is no subject accusative to the infinitive and no argument of the main verb which can supply a subject to the infinitive. In such cases, annotators should choose the XOBJ relation, as in example 146. But first it must be made sure that the verb in question can take a pure infinitive.

15.9 esse + participle

In the New Testament, we fairly often find a construction where the copula combines with a participle to form something which could almost be described as a periphrastic form. However, despite the regularity of the construction, we have chosen to treat it as if the copula had its full force:

(148)
```
    Root
     |
   PRED
     |
   erat ◄·.
     |      ·.
   XOBJ      :
     |       :
   docens ·.·
```
erat docens
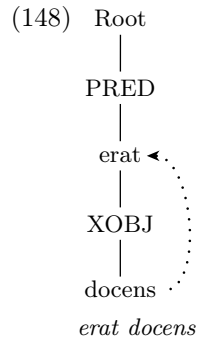
We use the same analysis for this construction in the other languages.

15.10 Gerunds

Gerunds on verbal nouns which cannot take a subject. As such, they should have an outgoing slash arrow. Gerunds on their own will very often be XADVs,

fulfilling an adverbial role in the sentence. This goes both for instrumental ablative gerunds and final genitive gerunds:

(149)

```
                    Root
                     |
                    PRED
                     |
                   audiat
                     |
                    SUB
                     |
                   habet
                   /  |  \
                SUB  OBJ  XADV
                /     |      \
              qui   aures   audiendi
               ↖··················
```

qui habet aures audiendi, audiat
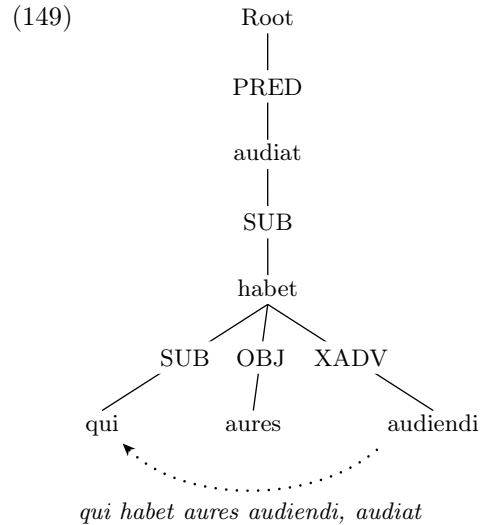
However, gerunds are also very often embedded in a preposition phrase. In such cases, the preposition serves as an ADV, while the gerund is an OBL of the preposition with a slash to its subject:

(150)

```
              Root
               |
              PRED
               |
            laborant
             /      \
           ADV      SUB
           /          \
          in         discipuli
          |            ↗
         OBL          ·
          |          ·
      remigando ····
```

discipuli in remigando laborant
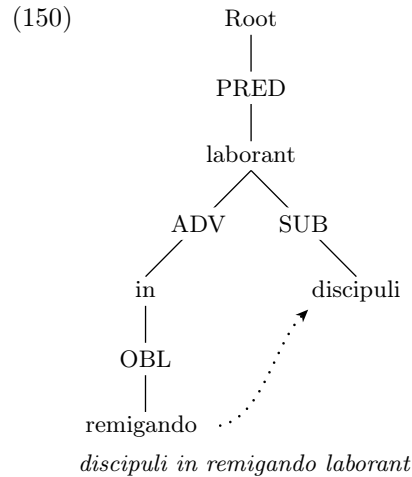
Another common use of gerunds is as arguments of certain verbal nouns, as in e.g. *spes vincendi*. In this function, they are NARGs, but with a slash to the subject if one is present. This slash should be directed towards the nearest possible subject - the number of nodes one must go upwards from the NARG/OBL slasher node before one descends towards the slashee node should be as small as possible.

Ablative gerunds are also typically ADVs:

91

(151)

```
                        Root
                         |
                       PRED
                       cavat
              /          |          \
           SUB          OBJ          ADV
          gutta        lapidem       sed
                                   /     \
                                ADV       ADV
                                 ui     cadendo
                                 |         |
                                Aux       ADV
                                 |         |
                                non      saepe
```
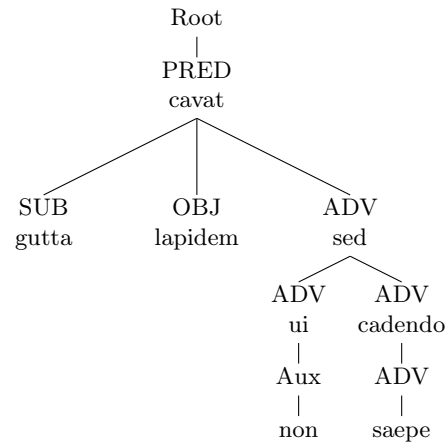
gutta cavat lapidem non vi sed saepe cadendo

15.11   Infinitives

The two most common functions of (non-articular) infinitives are head of AcI (which is a COMP) and complement of auxiliary verb (XOBJ). But infinitives can have other functions, often corresponding to that of the gerund in Latin. For example, a bare infinitive can express purpose, in which case it is an XADV. It can also be an argument of a noun, in which case it is a NARG. The articular infinitive can be the object of a preposition, in which case it is an OBL. XADVs and XOBJs underlie some restriction on their slashes, which should always be 'local', ie. point toward the mother node or a node which the mother node dominates. Slashes from NARGs and OBLs are freer, but should still be as local as possible - the number of nodes one must go upwards from the NARG/OBL slasher node before one descends towards the slashee node should be as small as possible.

(152)
```
        Root
         |
        PRED
         |
        ἔχει
         |
        OBJ
         |
        χρείαν  ◄⋯
         |          ⋮
        NARG       ⋮
         |          ⋮
        νίψασθαι ⋯
```
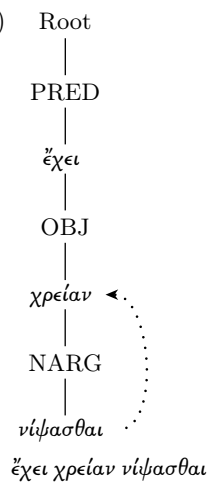
ἔχει χρείαν νίψασθαι

The subject of νίψασθαι is not represented directly, but is coreferent with the subject of ἔχει. If this subject was present in the sentence, the coreference would again be noted by means of the slash notation.

Furthermore, infinitives are often found in positions where it could be analysed as a subject. However, we have chosen to treat it as a COMP 'across the board', in order to avoid complicated choices:

(153)

```
                              Root
                               |
                             PRED
                               |
                              est
                          /          \
                   XOBJ            COMP
                    /                   \
                  et ···················► mori
                  /  \                     |
             XOBJ  XOBJ                  ADV
              /       \                    |
          dulce     decorum              pro
                                          |
                                         OBL
                                          |
                                        patria
```
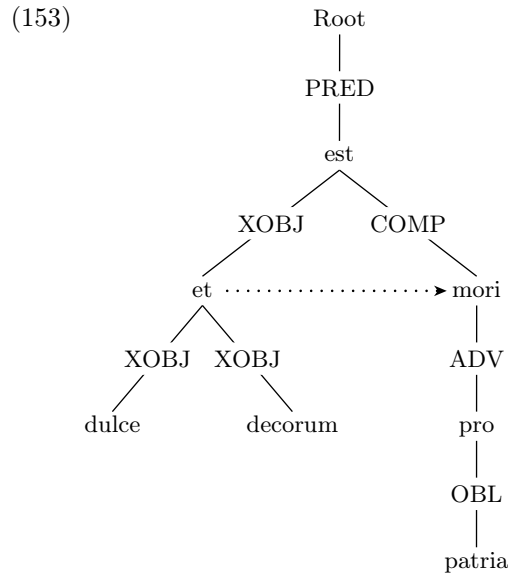
dulce et decorum est pro patria mori

15.12   OCS reflexives

Note that the reflexive marker with OCS and Gothic reflexive verbs is analysed as Aux:

(154)

```
                    Root
                     |
                   PRED
                   канте
                     |
                    Aux
                    сѧ
```

Reflexive clitics can sometimes occur in the dative instead of the accusative; they are still aux'es.

15.13   Datives

The dative has a variety of meanings within the languages in our corpus. In Greek and Gothic, for example, the instrumental and the dative have syncretized. Therefore the dative has a variety of instrumental meanings which

are almost always ADVs, except with some verbs like $\chi\rho\acute{a}o\mu\alpha\iota$ 'use' which takes a dative OBL.

In this section, we focus particularly on the 'dative proper', excluding meanings that have arisen by syncretism. The proper dative has as its central meaning the expression of 'the more remotely concerned person'. This will most often be an OBL. However, there are some other possibilities.

Note that it is not always easy to determine whether a dative-marked nominal is adverbal or adnominal, particularly in constructions which can be perceived as predicative possession:

(155) ı тръжьникомъ расыпа пѣнѧѕы (John 2:15)

(156) како ти естъ имѧ

(157) и имѧ еи елисаветъ (Luke 1:5)

Our rule of thumb is that if the construction contains a (possibly null) copula and can be perceived as a predicative possessive construction (as in (156) and (157), see section 15.16 for more), the dative should be considered an OBL on the verb.

In other such constructions (e.g. 155), the dative should be considered an adnominal ATR if the verb is *not* the copula, or if the construction is *not* possessive. The reason for this rule is that the class of dative ATRs is so much smaller than the class of dative OBLs contained in ditransitive constructions and possessive constructions, and thus they are also easier to tease apart manually.

In other adnominal uses, the dative can be a NARG, whereas the so-called ethical dative should be ADV. This is our general usage whenever we have copula + adjective + dative: *bonum esse alicui* and similar constructions.

15.14   Compound subjunctions

In Biblical Greek, there are some 'compound subjunctions' like $\H{\epsilon}\omega\varsigma \ \H{o}\tau o\upsilon/o\mathring{\upsilon}$ and $\pi\rho\grave{\iota}\nu \ \mathring{\mathring{\eta}}$. In such cases, we take the main word $\H{\epsilon}\omega\varsigma$ or $\pi\rho\grave{\iota}\nu$ to be the the real subjunction, mostly bearing an ADV relation to the governing verb and being the PRED head of a subordinated verb, whereas the accompanying element $\H{o}\tau o\upsilon, \ o\mathring{\upsilon}, \ \mathring{\mathring{\eta}}$ is an AUX dependent on it. We also treat $\breve{\alpha}\chi\rho\iota \ o\mathring{\upsilon}$ the same way. Gothic *þizei* is also done the same way, 52365.

Latin *eo quod* and *propterea quod*, on the other hand, is not taken as a compound subjunction: rather, *eo, propterea* gets its function in the main clause (mostly ADV), and the clause introduced by *quod* is an apposition on it. *und þatei* in Gothic is treated the same way, since *quod* and *þatei* are subjunctions.

15.15   Appositive names: $\kappa\alpha\lambda o\acute{\upsilon}\mu\epsilon\nu o\varsigma, \ \grave{o}\nu\acute{o}\mu\alpha\tau\iota$ etc.

Names can be expressed as appositions, which sometimes occur by themselves, sometimes with an added $\grave{o}\nu\acute{o}\mu\alpha\tau\iota$ and sometimes introduced by $\kappa\alpha\lambda o\acute{\upsilon}\mu\epsilon\nu o\varsigma$ (as

an ATR or APOS, see below) in the appropriate case. When it is not intro-
duced by καλούμενος or a similar verb, it is is simply an apposition to its noun,
eventually with ὀνόματι as its own attribute:

(158)

```
                        Root
                         |
                        PRED
                       ἔρχεται
                         |
                        SUB
                         εἰς
                        /    \
                   PART       APOS
            ἀρχισυναγώγων      Ἰάειρος
                  |              |
                 Aux            ATR
                 τῶν          ὀνόματι
```

ἔρχεται εἶς τῶν ἀρχισυναγώγων, ὀνόματι Ἰάειρος

(159)

```
            Root
             |
            PRED
             |
          ἤλθομεν
             |
            OBL
             |
            εἰς
             |
            OBL
             |
           τόπον
           /    \
        ATR     ATR
        τινὰ    καλούμενον ◄·.
                    |        ·.
                  XOBJ        ·.
                    |         ·.
                 λιμένας     ·.
                    |
                  XOBJ
                    |
                  Καλοὺς
```

ἤλθομεν εἰς τόπον τινὰ καλούμενον Καλοὺς λιμένας

95
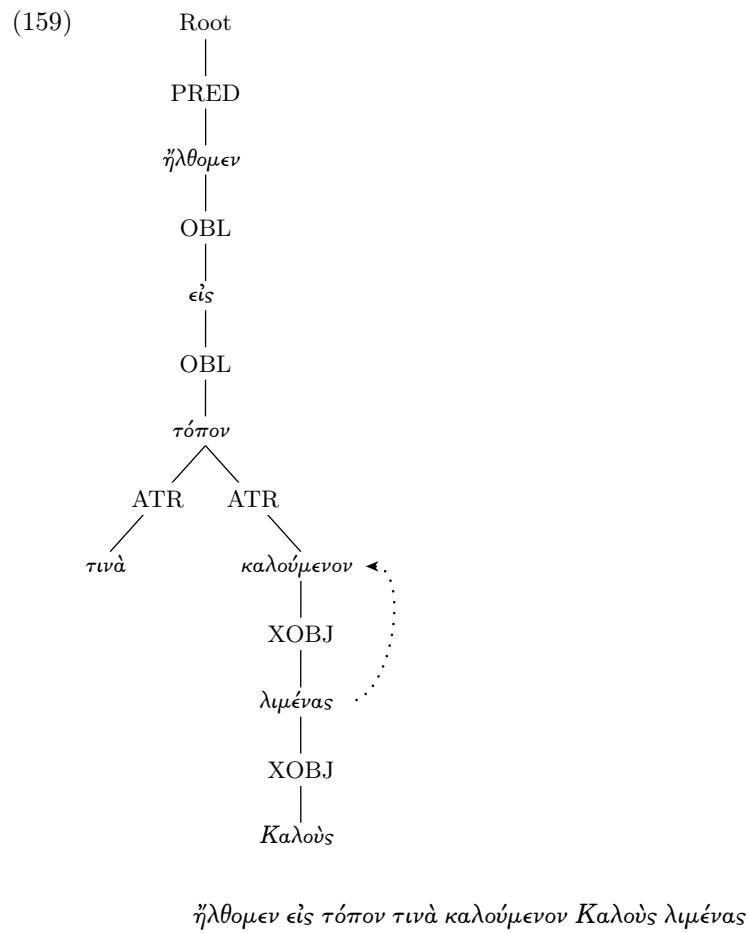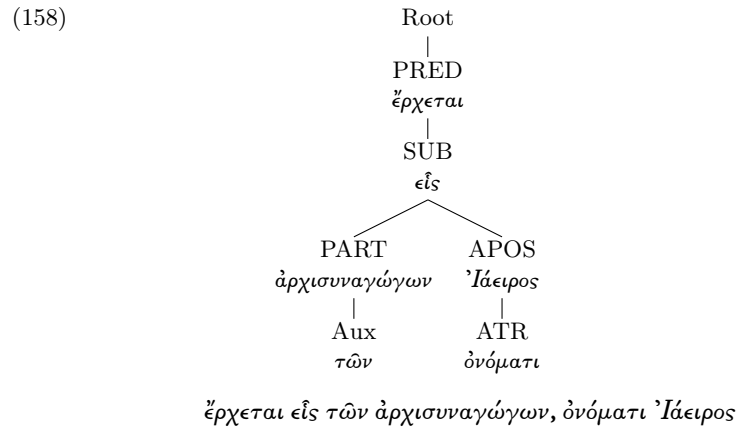
Here *καλούμενος* is an ATR because it determines the reference of *τόπον* and tells us which place is mentioned. If dependent on a proper noun or a definite expression, *καλούμενος* will be an APOS instead.

15.16 Copulae, copula-like verbs and location verbs:*esse, fieri* etc.

In the old Indo-European languages, copulae and copula-like verbs often double as verbs of position, as in example 36. We do not try to keep these apart, but treat the preposition phrase as an XOBJ in both cases. It should be stressed, though, that this analysis is purely conventional and does not carry over to other location verbs, like *stare, maneo* etc. which takes a preposition phrase as an OBL.

esse and similar verbs can also have existential force, meaning 'there exists'. In such cases, if there is a preposition phrase or another locative expression present, it will be an ADV, and the sentence means 'There were X in Y.'

The copula verb is typically also used in predicative possessive constructions like *liber est mihi* 'I have a book'. The dative is here considered an OBL dependent of the verb. In possessive constructions there is often no XOBJ, but sometimes – particularly in some naming constructions like *nomen alicui esse X* – we have both SUB, XOBJ and OBL. Such constructions express that the subject referent 'belongs to' (in a wide sense) the referent of the oblique.

15.17 Vocatives

It is easy to think that all morphological vocatives will have the relation VOC, but annotators should note that there are other possibilities. First, and most obvious, vocative nouns and adjectives can be ATR or APOS under another vocative.

But there are other possibilites. In *Οὐ πᾶς ὁ λέγων μοι κύριε κύριε εἰσελεύσεται εἰς τὴν βασιλείαν τῶν οὐρανῶν*, f.ex., *κύριε κύριε* will be an OBJ of *λέγων*. In *Τί δέ με καλεῖτε κύριε κύριε*, *κύριε* is an XOBJ (with a slash to *με*).

15.18 And it came to pass. . .

Narrative sequences are often introduced by *ἐγένετο*, *factum est autem* or similar expressions. These are sometimes followed by a substantival clause (*ὅτι, ut*) which is clearly a COMP dependent of *ἐγένετο/ factum* Often, however, the subjunction is lacking. We still treat these sentences as COMP dependents, no different from other substantival clauses without subjunction:

(160)

```
                        Root
                         |
                        PRED
                       .factum
            _____|_____
           |               |                |
          Aux             Aux              COMP
          est            autem             exiit
                                    _____|_____
                                   |                     |
                                  SUB                   OBL
                                edictum                  a
                                                         |
                                                        OBL
                                                      Augusto
                                                         |
                                                       APOS
                                                      Caesare
```
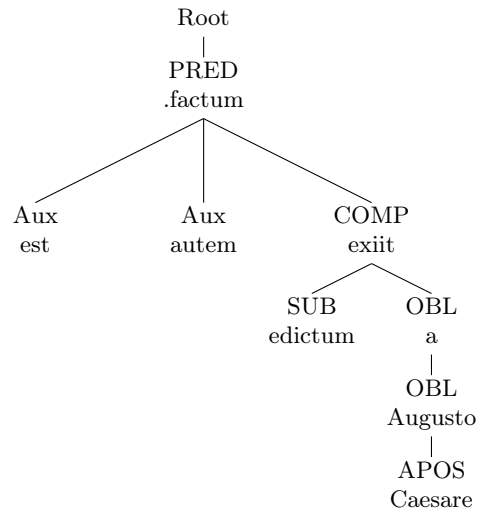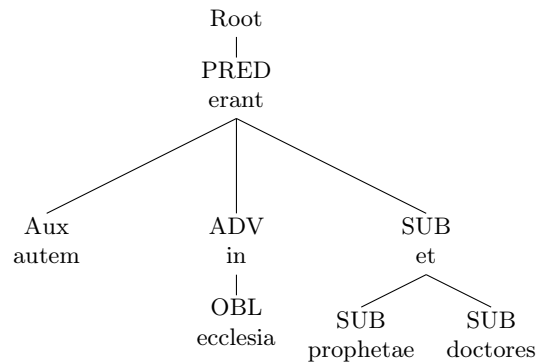
However, we sometimes find *factum est ... et ...* V. Here we coordinate the V with *factum est*.

Adverbs of time and space should generally be put under *factum*.

15.19   Copula, verb of position, verb of existence

In the old Indo-European languages, the copula ('John is a doctor') is often also a verb of position ('John is in London') and a verb of existence ('There are doctors in London'). We do not attempt to keep the first two apart: both complements ('a doctor') and ('in London') are considered XOBJs. But the existence verb is treated differently: here there is in fact no complement, only an adverbial:

(161)

```
                        Root
                         |
                        PRED
                        erant
            _____|_____
           |               |                |
          Aux             ADV              SUB
         autem             in               et
                           |          _____|_____
                          OBL        |               |
                        ecclesia     SUB             SUB
                                  prophetae        doctores
```
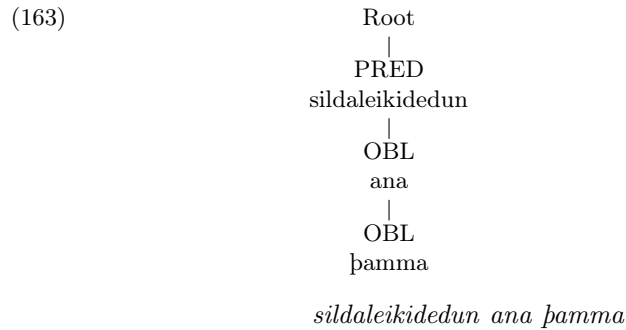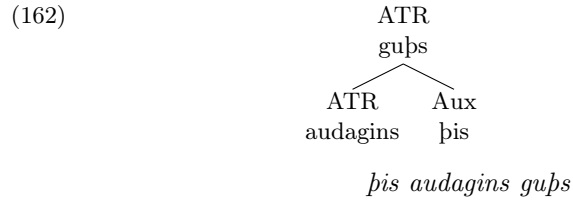
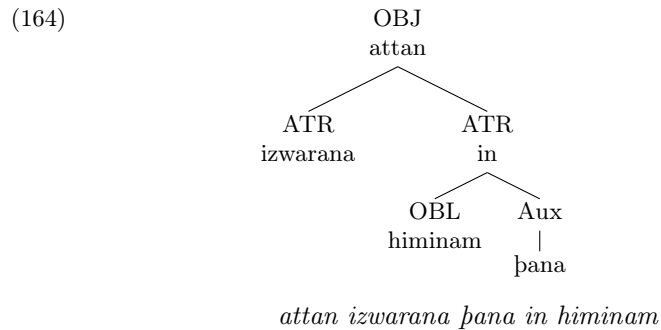*erant autem in ecclesia propheta et doctores*

If in doubt, annotators should ask themselves whether a translation by 'there is/are' is possible in English, in which case the verb should be treated as a verb of existence.

15.20   Gothic *sa*

Gothic *sa* shows the syntactic behaviour of a demonstrative pronoun/adjective,
but can also be used as a pure substitute for the Greek article. We try to capture
this distinction by giving *sa* the Aux-relation whenever it functions as a mere
article; when it has full deictic force, on the other hand, it will typically be an
ATR-dependent of a noun, or bear a nominal function itself. The first example
shows *sa* as an article, the second *sa* as a demonstrative pronoun:

(162)
```
                 ATR
                 guþs
               /      \
          ATR          Aux
        audagins        þis
```

þis audagins guþs

(163)
```
              Root
               |
              PRED
          sildaleikidedun
               |
              OBL
              ana
               |
              OBL
            þamma
```

sildaleikidedun ana þamma

Note that just like the Greek article which it serves to translate, Gothic *sa*
can be used to nominalize adverbs or prepositions, in which case it is made an
Aux-dependent on the head of the adverbial element:

(164)
```
                 OBJ
                attan
               /      \
          ATR          ATR
        izwarana        in
                      /     \
                  OBL       Aux
                himinam      |
                            þana
```

attan izwarana þana in himinam

(165)
```
              ADV
             fram
               |
             OBL
              nu
               |
             Aux
            himma
```
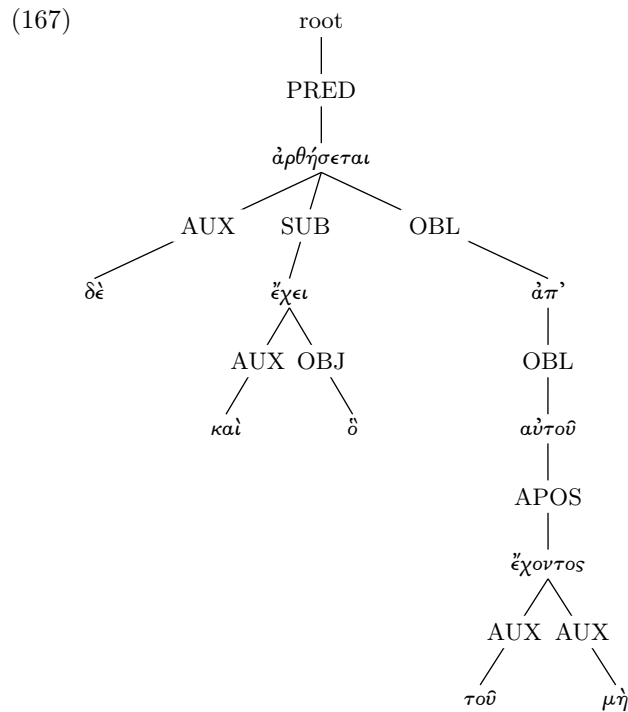
It can often be hard to decide whether *sa* in a given context passage has demonstrative force or not. Annotators should ask themselves whether *this/that* or *the* is the best translation.

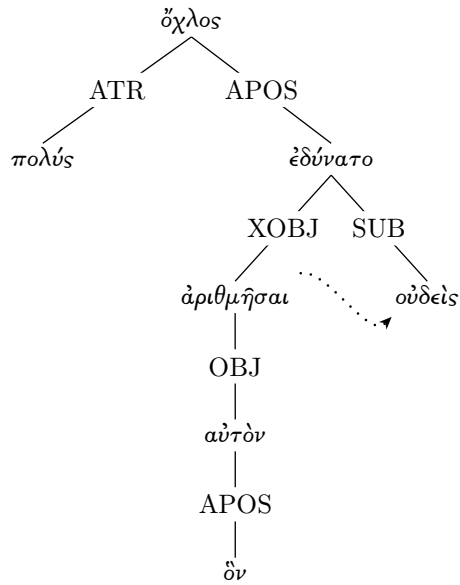## 15.21 'Pleonastic' αὐτός - resumptive pronouns and topicalizations

In many cases, Greek (and sometimes the translations) have a pleonastic αὐτός which picks up the reference of a full lexical noun phrase. A typical example is:

(166) τοῦ δὲ μὴ ἔχοντος, καὶ ὃ ἔχει ἀρθήσεται ἀπ᾽ αὐτοῦ.

αὐτοῦ carries the syntactic function in the sentence, whereas τοῦ δὲ μὴ ἔχοντος supplies the semantics. This is analysed by having τοῦ δὲ μὴ ἔχοντος be an apposition on αὐτοῦ:

(167)

```
                              root
                                |
                              PRED
                                |
                            ἀρθήσεται
                     ╱          |          ╲
                  AUX         SUB           OBL
                 ╱             |              ╲
               δὲ            ἔχει             ἀπ᾽
                            ╱    ╲              |
                         AUX    OBJ            OBL
                        ╱         ╲             |
                      καὶ          ὃ          αὐτοῦ
                                                |
                                              APOS
                                                |
                                             ἔχοντος
                                              ╱   ╲
                                           AUX    AUX
                                          ╱          ╲
                                        τοῦ           μὴ
```

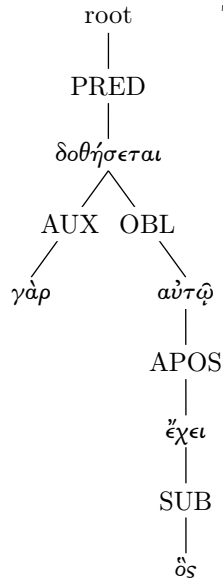We use the same analysis for relative clauses with resumptive pronouns: αὐτός gets the grammatical function, and the relative pronoun is an apposition on it:

```
                    ὄχλος
                   /      \
               ATR        APOS
               /             \
            πολύς           ἐδύνατο
                           /       \
                      XOBJ         SUB
                       /             \
                  ἀριθμῆσαι ········· οὐδεὶς
                      |         ↙
                    OBJ
                      |
                    αὐτὸν
                      |
                    APOS
                      |
                     ὃν
```

ὄχλος πολύς, ὃν ἀριθμῆσαι αὐτὸν οὐδεὶς ἐδύνατο
(lit.) 'a large crowd which noone could count it'

Sometimes (e.g. 6784) we get a full NP inside the relative clause; it should get the grammatical function, and the relative pronoun should be an APOS on it.
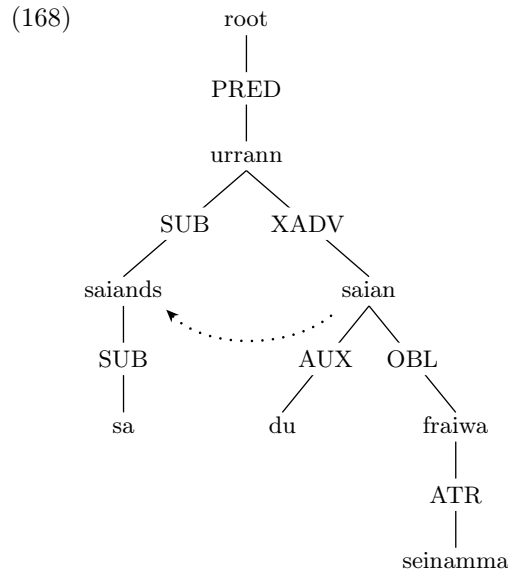
More common, however, are the cases where we get a fronted relative clause which is picked up by an αὐτός in the main clause. We analyse these as non-restrictive relative clauses on αὐτός: root   The same analysis is used

```
                    root
                      |
                    PRED
                      |
                  δοθήσεται
                   /        \
               AUX          OBL
               /              \
             γὰρ             αὐτῷ
                               |
                             APOS
                               |
                             ἔχει
                               |
                             SUB
                               |
                              ὃς
```

whenever the fronted constituent is not a relative clause, but a normal NP.

15.22   Gothic *at*, *du* introducing infinite predication

In Gothic, infinite predications such as infinitive constructions and absolute constructions are sometimes introduced by *at* and *du*. These are taken as aux-dependents of the verbal head of the construction:

(168)
```
                    root
                     |
                    PRED
                     |
                   urrann
                   /     \
              SUB        XADV
              /             \
         saiands           saian
            |         ↖··········  /    \
           SUB              AUX    OBL
            |                |       \
           sa               du      fraiwa
                                      |
                                     ATR
                                      |
                                  seinamma
```

Exactly analogous is the treatment of *at* + absolutive construction e.g. in 37757. Note that when there is only one *du*, but two coordinated infinitives, we take *du* as a dependent on the closest infinitive only, cf. 37500. Since infinitives can occur without *du*, and since it is not possible to decide whether *du* also belongs to the other infinitive, this is in a sense the minimal claim.

15.23   AUX on pronouns – OCS иже аще

In OCS, аще converts relative pronouns into indefinite relative pronouns, such as in 36505. In these cases, аще should be analysed as a non-comparable adverb morphologically and as an AUX directly on the pronoun. In the Greek counterpart sentences, however, ἄν is considered to have sentence scope and should therefore be an AUX on the verb, as in 6652.
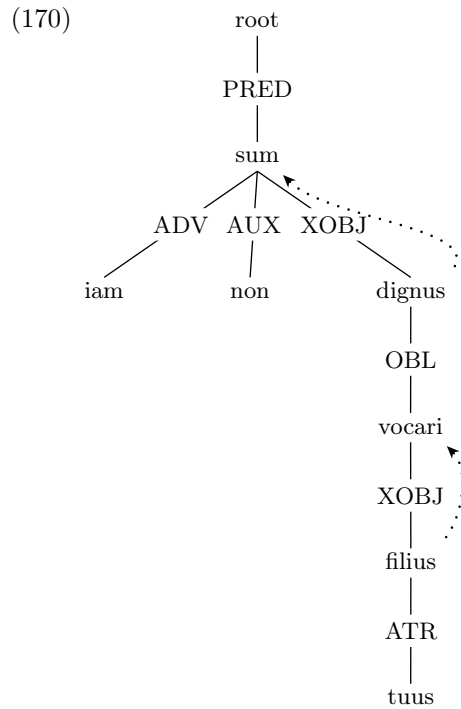
15.24   Adnominal infinitives

In several cases, infinitives modify nominal forms like pronouns, adjectives and nouns, as in 'easy to read', 'something to eat' etc. We treat such infinitives as *modifiers* since it tells us *in what respect* something is easy and *what kind* of something we are talking about.

Dependents on pronouns and nouns therefore often become ATRs:

(169)
```
root
 |
PRED
 |
habeo
 |
OBJ
 |
aliquid
 |
ATR
 |
dicere
 |
OBL
 |
tibi
```
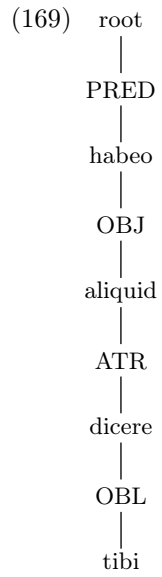
Dependents of adjectives is a somewhat more complicated matter: many adjectives such as *dignus*, ἄξιος etc. *require* an infinitive or a subordinate clause. The infinitive therefore becomes an OBL, or a COMP if it is a full accusative with infinitive construction:

(170)
```
              root
               |
             PRED
               |
              sum
             / | \
          ADV AUX XOBJ
           |   |    |
          iam non  dignus
                     |
                    OBL
                     |
                   vocari
                     |
                   XOBJ
                     |
                   filius
                     |
                   ATR
                     |
                   tuus
```

102

But note that adjectives also can take infinitives that are ADVs, such as in the 'easy to read' construction.

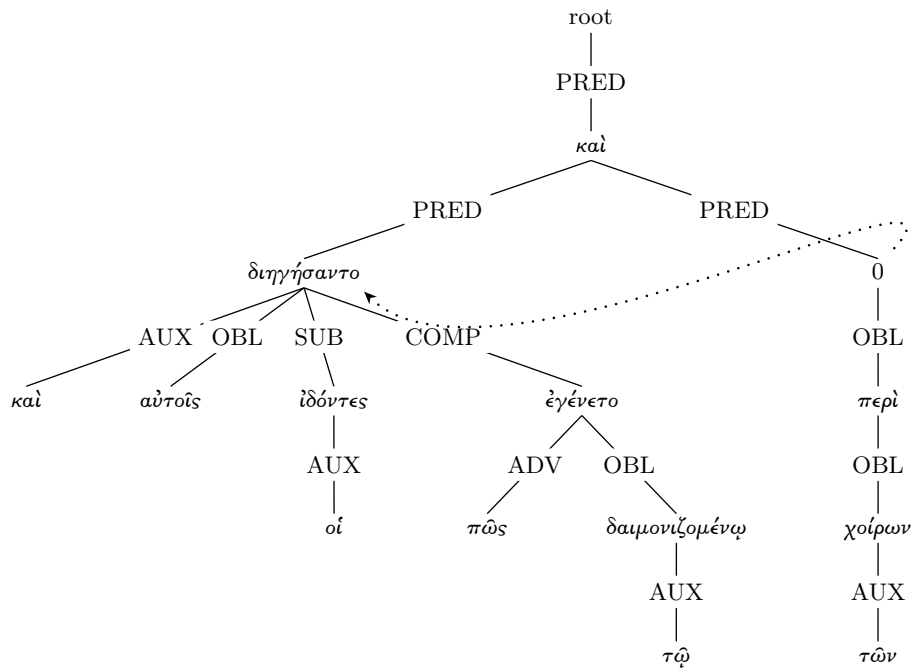## 15.25 Impersonal temporal expressions: *cum sero factum esset* etc.

In impersonal temporal expressions like *cum sero factum esset, cum nona hora esset* we take the temporal expression to be a XOBJ, since the construction is impersonal the time is not predicated of something, but currently the system enforces that all open relations have a slash, so there should be a slash to the copula.

However, we sometimes get *hora* combined with something which cannot readily be an attributive modifier, such as *hora est vespera*. In these cases, *hora* is taken as the subject.
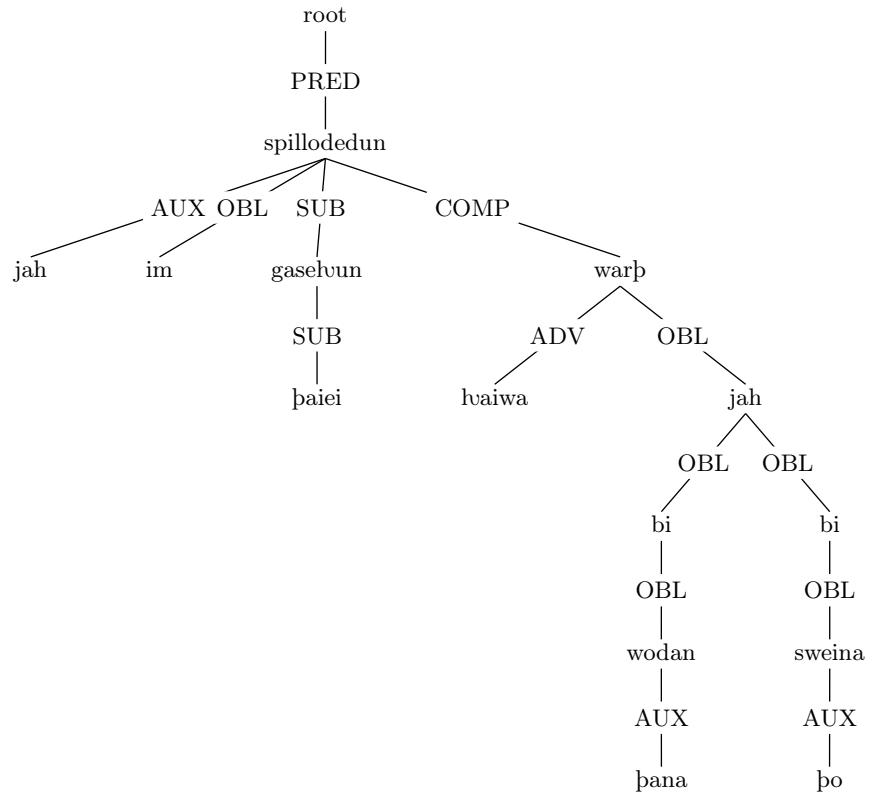
15.26 It happened to him. . .

Verbs such as gr. *γιγνομαι* may express that some event takes place. The person affected by the event may surface as a dative (in Greek) or as a prepositional phrase (*de* in Latin, *bi* in Gothic). We take these expressions as OBLs.
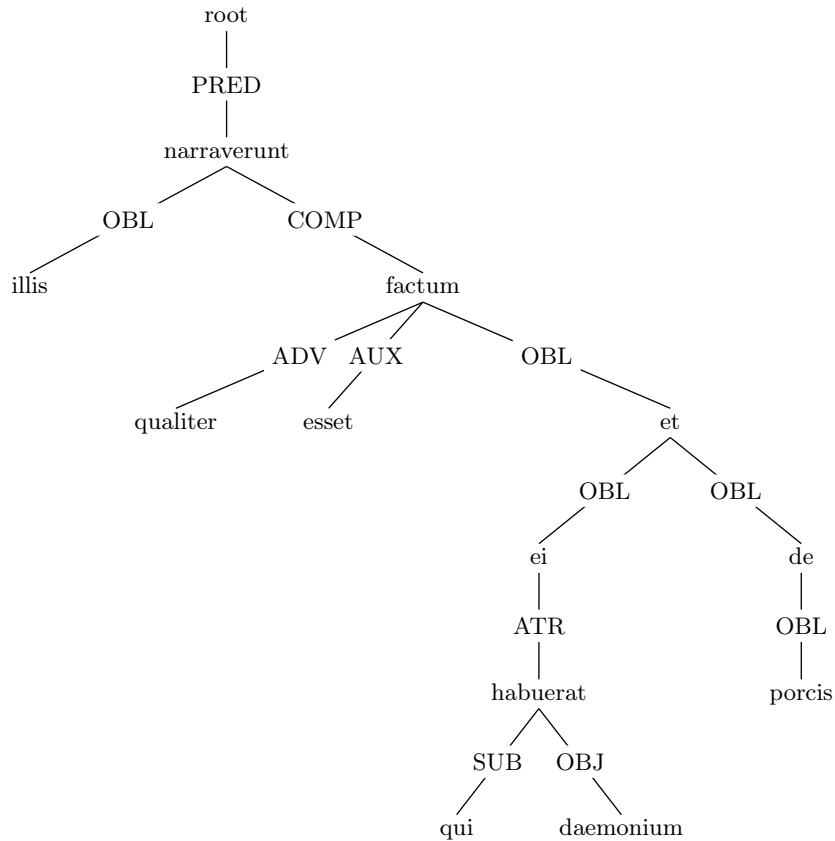
(171)

(172)

```
                            root
                             |
                           PRED
                             |
                        spillodedun
           ┌───────┬──────┼──────────────┐
          AUX     OBL    SUB            COMP
           |       |      |               |
          jah     im   gaseƕun          warþ
                         |          ┌─────┴─────┐
                        SUB        ADV         OBL
                         |          |           |
                       þaiei      ƕaiwa        jah
                                          ┌─────┴─────┐
                                         OBL         OBL
                                          |           |
                                          bi          bi
                                          |           |
                                         OBL         OBL
                                          |           |
                                        wodan       sweina
                                          |           |
                                         AUX         AUX
                                          |           |
                                        þana         þo
```

104

(173)

root

PRED

narraverunt

OBL   COMP

illis   factum

ADV AUX   OBL

qualiter   esset   et

OBL   OBL

ei   de

ATR   OBL

habuerat   porcis

SUB   OBJ

qui   daemonium

15.27   'if not' − εἰ δὲ μή

'if not' is often rendered in Greek as εἰ δὲ μή and in Slavic as аште ли же ни. Observe that we need an empty verbal node under the subjunction here; if the negation was hung directly on the subjunction the meaning would be 'not if'. The particle should belong to the main clause.

    Latin uses *alioquin* and Gothic *aiþþau* for this. Both are simply treated as adverbs.
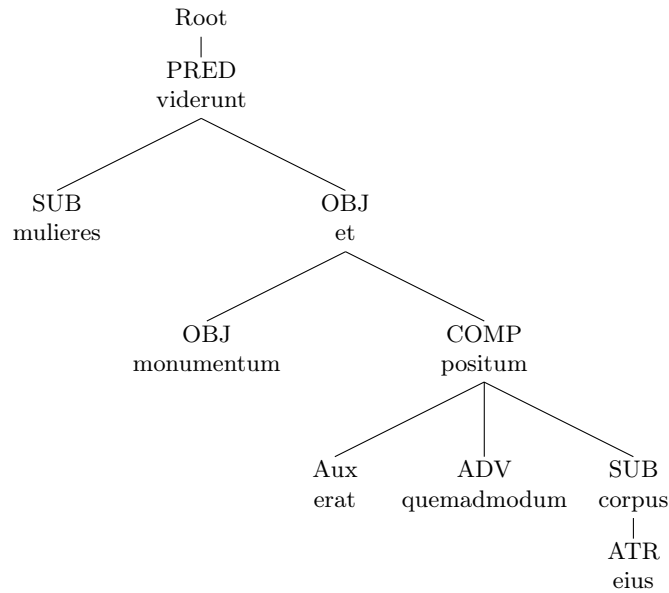
15.28   COMP and OBJ in the same sentence

Sometimes a verb seems to govern both a COMP and an OBJ. There are two different cases to distinguish:

1. COMP and OBJ are coordinated

2. the OBJ is co-referent with the subject of the COMP

In the first case, the COMP and the OBJ should simply be coordinated and the coordinating node should be given the OBJ relation:
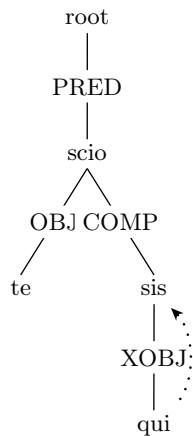
(174)

```
                              Root
                               |
                              PRED
                             viderunt
                    ┌───────────────────────┐
                   SUB                      OBJ
                 mulieres                    et
                              ┌──────────────────────┐
                             OBJ                     COMP
                          monumentum               positum
                                          ┌───────────┼───────────┐
                                         Aux         ADV         SUB
                                         erat     quemadmodum    corpus
                                                                   |
                                                                  ATR
                                                                  eius
```

viderunt mulieres monumentum et quemadmodum positum erat corpus eius
The women beheld the sepulchre and how his body was laid.

But in most cases where the object is coreferent with the subject of the COMP we have a different construction ('prolepsis' in traditional grammar) and here we make both the OBJ and the COMP directly dependent on the verb without any coordination:
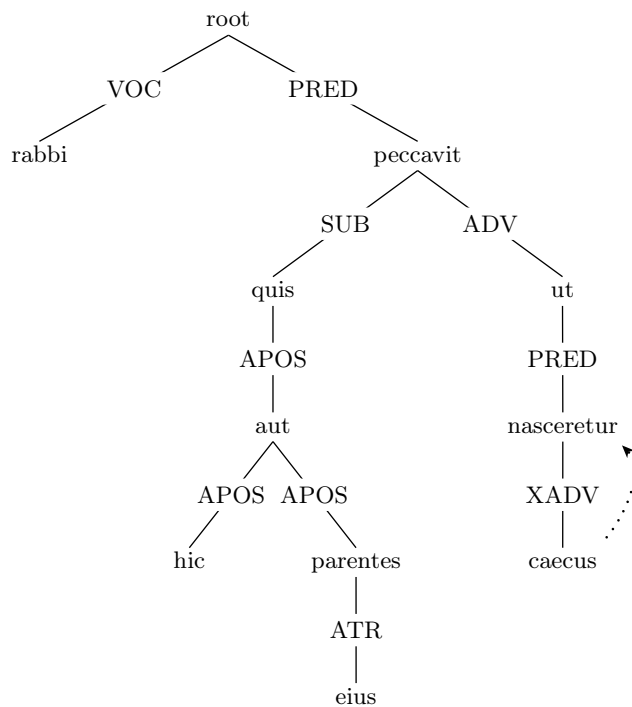
(175)

```
            root
             |
            PRED
             |
            scio
         ┌───────┐
        OBJ     COMP
         |       |
        te      sis
                 |
               XOBJ
                 |
                qui
```

Scio te qui sis 'I know who you are.'

It seems characteristic of these constructions that the object is not really a thematic argument of the verb, but just anticipates the subject of the complement clause.

15.29 Questions with alternatives

Sometimes a question is asked with alternatives to choose between, as in "Who is the better one, me or my brother?". In these cases, the alternatives are taken as appositions on the question-word:

(176)

```
                              root
                    ┌──────────┴──────────┐
                  VOC                    PRED
                   │                       │
                 rabbi                  peccavit
                              ┌────────────┴────────────┐
                            SUB                         ADV
                             │                           │
                            quis                         ut
                             │                           │
                           APOS                        PRED
                             │                           │
                            aut                       nasceretur
                      ┌──────┴──────┐                    │
                    APOS          APOS                  XADV
                     │              │                    │
                    hic          parentes             caecus
                                    │
                                   ATR
                                    │
                                   eius
```

16 General issues

16.1 ADV or OBL? adjunct or argument?

It can often be hard to decide whether a given element should be an ADV or an OBL, or – in more traditional terms – whether an element is an adjunct or an argument. Therefore we provide a super-tag which should be used whenever the annotator cannot decide, but the following section offers some advice to guide the choice.

Arguments are traditionally defined as 'elements seen as required by the verb'. In old Indo-European languages, nothing is really 'required by the verb', because all elements, even subjects and objects, can be dropped if they are easily inferable from the context. The test is therefore not whether an element can be left out or not, but rather whether it is possible to conceptualize the event expressed by the verb while abstracting from some element in the sentence. If that is possible, the element is an adjunct. Adjuncts (ADVs) are elements which elaborate upon an event desription and gives extra information about the event.

There are some kinds of adverbials which are almost always adjuncts. These are

- Adverbials of manner

- Adverbials of instrument

- Adverbials of time

- Adverbials of place

- Adverbials of purpose

But even here there are exceptions: in *bene tractare*, for example, *bene* is an argument, since it is not possible to conceptualize the idea of 'treating someone' while abstracting away from the way of treating him. *utor* + ablative in Latin, and χράομαι + dative in Greek are cases where an adverbial of instrument has been grammaticalized so as to become a ablative/dative "object" - which we treat as an OBL. Place adverbials are typically OBLs and not ADVs when they appear with 'positional verbs', such as *stare, sedere* etc. However, even these can sometimes take a position ADV. Consider the following interesting example:

(177)
```
                          Root
                           |
                          PRED
                        sedebant
                        /        \
                   ADV            OBL
                    in             in
                    |              |
                   OBL            OBL
                synagogis       cathedris
                                   |
                                  ATR
                                 primis
```
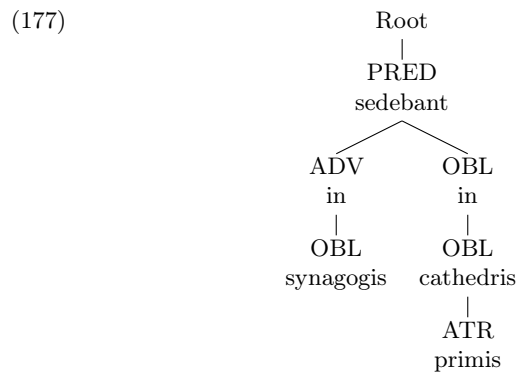
in synagogis sedebant in cathedris primis

The *cathedris*, seats, are inextricably linked to the sitting event, but the synagogues are not.

Elements of an idiom will also often be OBLs, e.g. *cum* in *pacem facere cum aliquo.* some more

There is also another way of thinking about arguments: they are elements that can appear in a sentence because of the main verb. Specifications on manner, instruments, times and places can appear with almost any verb. Specifications of goal and source, on the other hand, can only appear with a subset of verbs - mostly motion verbs - therefore they are arguments of their verbs. Sometimes both a source and a goal appears in a sentence, and both are OBLs:

(178)
```
                        Root
                          |
                        PRED
                       ἤρχοντο
                       /      \
                  OBL          OBL
                 πρὸς        πάντοθεν
                   |
                  OBL
                 αὐτὸν
```

ἤρχοντο πρὸς αὐτὸν πάντοθεν
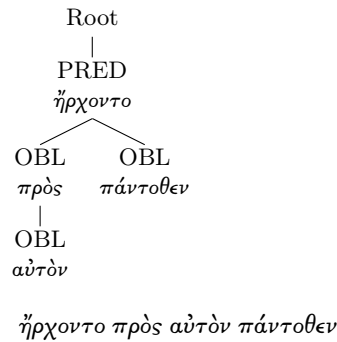
The two ways of thinking about arguments do not always give the same predictions. Here for example, one could argue that it is possible to conceptualize motion without a goal and a source; but goal and source are 'selected' by the verb and cannot appear with any verb.

If the two tests give the same result, we have a rather clear case of an argument. But most elements which test positively for argumenthood in either one should be considered arguments.

16.2 ATR or APOS? attribute or apposition?

. . .

16.3 ATR or XADV?

Adjectives and participles (and other adjective-like categories) can be attributive or predicative/conjunct. In the first case it helps determine the reference of the noun phrase; in the second case, it is a predication which expresses an event or a state which 'accompanies' the main event and which takes the noun as its subject. Thus, example 92 has two readings: 'The happy Gauls (as opposed to f.ex. the sad ones) entered the camp', with a restrictive adjective which should be an ATR, and 'The Gauls, being happy, entered the camp', where the adjective does not restrict the group of Gauls, but rather describes a state which coincides with the main event. It is generally the case that attributive adjectives/participles can be rendered by a restrictive relative clause ('The Gauls who were happy entered the camp.') and predicative ones by non-restrictive relative clauses or even adverbial clauses: 'The Gauls, who were happy, entered the camp.'

It can sometimes be hard to know whether a participle or an adjective is an ATR or an XADV, ie. whether it helps determine the reference of the noun (ATR) or is predicated of the noun (XADV).

With definite noun phrases, the decision is easier to make than with indefinite nouns. In Greek there is overt marking: participles/adjectives in attributive position (directly after the article) are ATRs and participles/adjectives in predicative position are XADVs. But note that not all adnominal elements follow

the standard rules; for example $\pi\hat{a}\varsigma$ regularly appears in predicative position even when it is attributive.

Even in languages with no overt marking of the attributive/predicative opposition or of the definite/indefinite opposition, it is generally easier to determine whether an item is an ATR or an XADV if the NP is semantically definite. This is so because the NP in such cases has a definite referent, and we can easily determine whether the adjective/participle helps picking out this referent.

With indefinites, this is more difficult to determine. Annotators can try whether it is possible to paraphrase a participle or adjective by a non-restrictive relative clause - if so, the participle/adjective is likely an XADV. Another test is whether it is possible to set up a contrasting referent - if so, the participle/adjective is likely an ATR.

16.4   XADV or SUB?

A similar question arises whenever a participle is dependent on a verb without there being an overt subject present, as in *venientes dicunt ei.* If *venientes* is taken as the subject, the sentence means 'those who are coming say to him'. If *venientes* is taken as an XADV, it means 'Coming (to him), they said to him'. There are no clear tests to be used. Annotators should base their analysis on a semantic interpretation of the sentence.
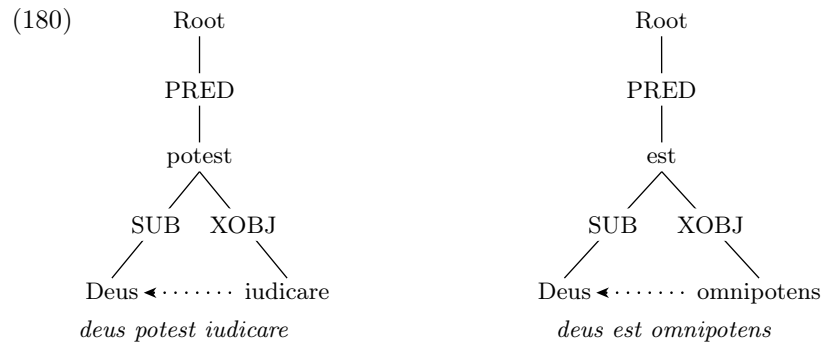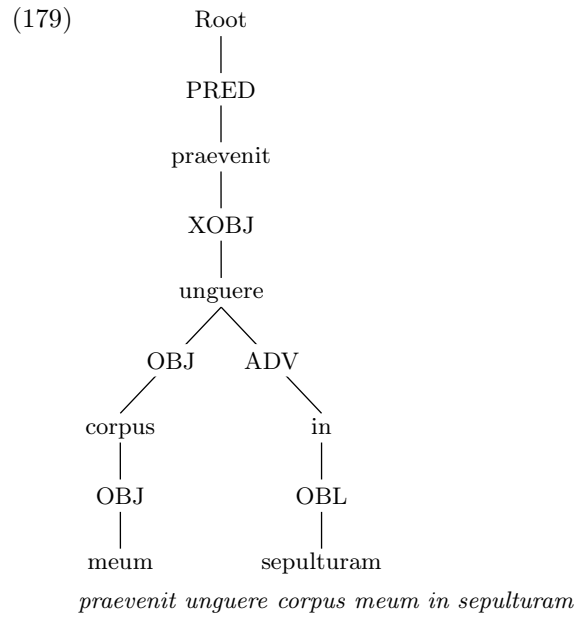
16.5   More on the XOBJ relation

The XADV and XOBJ relations are unfamiliar from traditional school grammar. XADV corresponds quite closely to the concept of predicative/conjunct participle or adjective, so it should not be too hard to grasp. The XOBJ relation, on the other hand, does not correspond closely to one particular category of traditional grammar, so it needs further explanation.
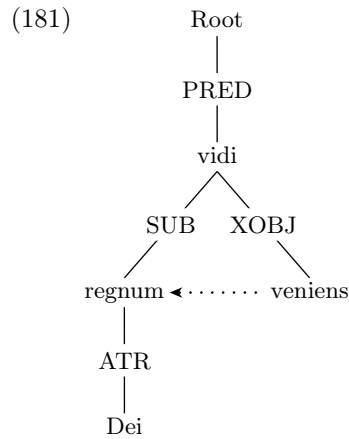
The crucial facts to grasp about the XOBJ relation is that it is used for predications which have external subjects (whence the X-) and which are governed by another verb. This means that nothing which can itself have a subject daughter, is an XOBJ: all finite verbs are excluded.

The prototypical XOBJ is therefore an infinite verbal form, but other word classes can also be predicative: most notably nouns, adjectives and prepositions.

XOBJ is a governed relation, an element which is selected and demanded by the matrix verb. A prototypical case are auxiliary verbs, like *posse, coepi, velle* and others, which demand a complement infinitive (and this infinitive cannot take its own subject). However, other verbs can also take an infinitive argument:

(179)

```
                        Root
                         |
                        PRED
                         |
                      praevenit
                         |
                        XOBJ
                         |
                      unguere
                       /      \
                    OBJ       ADV
                    /            \
                corpus            in
                  |                |
                 OBJ              OBL
                  |                |
                meum          sepulturam
```

praevenit unguere corpus meum in sepulturam

(180)

```
        Root                              Root
         |                                 |
        PRED                              PRED
         |                                 |
       potest                             est
       /    \                            /    \
     SUB    XOBJ                       SUB    XOBJ
     /        \                        /        \
  Deus ◄······· iudicare           Deus ◄······· omnipotens
```

deus potest iudicare　　　　　　*deus est omnipotens*

The facts are the same in both constructions: both *iudicare* and *omnipotens* are selected by the main verb and cannot be deleted; and they both have external subjects (they do not themselves govern their subject). For this reason, we treat traditional predicative complements as XOBJs. A notable case which often appears is the accusative with participle construction:

111

(181)

```
                  Root
                   |
                 PRED
                   |
                 vidi
                /      \
            SUB        XOBJ
            /             \
      regnum ◄·······  veniens
          |
        ATR
          |
        Dei
```

16.6   Empty nodes

In our model, we only use empty nodes to stand in for missing conjunctions in asyndetic coordination and missing verbs in elliptical constructions. Empty nodes should never be used for any other purpose, ie. to mark a 'null head noun' on which an adjective is dependent.

17   Error messages during syntactic annotation

17.1   'Must have or inherit one outgoing slash edge'

This error message means that a token which is XADV or XOBJ lacks a slash arrow.

Open predications (XADV and XOBJ, see section 10.9) do not have an 'internal' subject dominated by the predicate. Instead, the instead the subject is present somewhere else in the same sentence and should be linked to via a slash arrow. If the subject is not overtly present in the sentence, it must nevertheless be present in the argument structure of the governing verb and to represent this we let the slash arrow point towards the verb.

Notice that two XADVs or XOBJs under the same conjunction should not have one slash arrow each: instead the slash should be put on the conjunction. It will be inherited by the daughter nodes.

If you can't find a suitable target for the slash arrow, the use of XADV or XOBJ is probably wrong.

17.2   'May not be a daughter of the root node'

Only tokens bearing the relations PRED, PARPRED or VOC are allowed as daughters of the sentence root. If you let any other element be directly dominated by the root, you will get this error message.

17.3 'Subgraphs overlap'

If there are several PRED daughters directly under the root, they must be strictly ordered linearly. If there are two PRED tokens under the root, all daughters of the first one must precede all daughters of the second one. If there are three PRED tokens, all daughters of the first one must precede all daughters of the next two; and all daughters of the second one must precede all daughters of the third one.

The reason for this is that if one sentence root has several PRED daughters, the tree will eventually be 'sawed up' in several trees each having only one PRED daughter. To assure that this will be possible, we need to secure that the trees are linearly ordered. If one sentence is contained in another, you should use the PARPRED relation instead.

17.4 'Slashes are not contained by subgraph'

If there are two PRED daughters directly under the root, it is not allowed to have a slash arrow between the a daughter of the one of the PREDs and the other. In other words, the slasher and the slashee should both be daughters of the same PRED.

This error message is most likely to occur in the analysis of gapping in asyndetic coordination. In such cases, it is necessary to conjoin the two subtree through an empty node, see example 109.

The reason is, as in the preceding section, that two PRED daughters under the same root will eventually be converted to dependents of one root each, with no possibility of slashing between them.

17.5 'The head of a PARPRED/VOC relation must be the root node or a valid coordination'

Elements with the relation VOC or PARPRED should always be made daughters of the sentence root.

17.6 'Slash must target the node's head or a node dominated by the head'

The subject of an open predication (XADV or XOBJ, see section 10.9) should always be found in the same sentence. In case the subject of the open predication is not overtly realized in the same sentence, but is found in a conjoined sentence, the slash arrow should point towards the dominating verb, which in turn will have a 'shared argument' slash arrow to the overt realization of the subject of the XADV/XOBJ. ADD REFERENCE TO AN EXAMPLE.

17.7 'The head of a PRED relation must be the root node, a subjunction or a valid coordination'

There are restrictions on when to use the PRED relation: in fact it is only used under the sentence root or under a subjunction. There are two common situations where annotators get this message.

First, relative sentences and dependent interrogative clauses should *not* be headed by the relative/interrogative word, with the verb as a PRED daughter. Follow the rules in sections 10.4 and 10.5 instead.

Second, many subjunctions are not marked as such in the morphology. Check the morphological annotation and make sure that the subjunction is not annotated as a conjunction, non-comparable adverb or something else.

17.8 'A subjunction may only be the dependent in a COMP, ADV or APOS relation'

Subjunctions should always be COMP (if selected for by the verb and necessary for the sentence), ADV (if introducing an adjunct clause) or APOS (if dependent on a noun).

If you don't understand why you get this message, please go to the morphological annotation and check whether it is caused by a token wrongly marked as a subjunction.

17.9 'An infinitive may not be the dependent in an ADV relation'

Infinitives can certainly be adverbials (for example final infinitives), but they always imply a subject and so should be XADVs instead.