

**Guidelines for Tectogrammatical Annotation of Latin Treebanks
The Treatment of Some Specific Constructions**

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This document describes the treatment of some specific constructions in the tectogrammatical annotation of the *Index Thomisticus* Treebank and the Latin Dependency Treebank.

Only those constructions that are either not covered by or are treated differently from the guidelines for tectogrammatical annotation of the Prague Dependency Treebank are reported here.

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Lack of the governing verb in "nominal clauses"

Nominal clauses that are interpreted as verbal present the lack of the governing verb, which cannot be recovered from the context (i.e. the missing verb is not a copy of a verb occurring in an ATS). See the Tectogrammatical guidelines (p. 198): "usually a simple verb could be inserted into such constructions, however this possibility is not a necessary condition for interpreting this constructions as verbal".

The missing head verb of a nominal clause interpreted as verbal must be added to the TGTS as a newly added node. This node is assigned the t-lemma substitute #EmpVerb (nodetype: qcomplex).

The nodes that depend on the #EmpVerb node are assigned a functor according to their semantic role in the clause (see figure 6.26 in <http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch06s04s01.html#pic232slov6>).

This is in accordance with
<http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch06s12s01.html#elipsa1.1.2>

Example: 005.SCG*LB1.CP--++2.N.-1.4-1.8-4 "[...] unde sapiens dicit, beatus vir qui in sapientia morabitur [...]".

In this example, the utterance "beatus vir" lacks the head verb, which could be thought to be "sum", but this is not the point. A new node is added, depending on "dico", with t-lemma substituted #EmpVerb (nodetype: qcomplex). The functor PAT is assigned to it, because this is the semantic role of the node. The words "vir" and "beatus" are assigned the functors ACT and PAT respectively, because these are the semantic roles according with the utterance they are in.

Two Newly Added Nodes Depending on Gerundives

Gerundives are assigned 2 newly added nodes (at least 2: if a three-argument verb is concerned, you should add three new nodes):

1. #Gen, ACT, topic
2. #PersPron, PAT, topic: with textual coreference to the (usually) noun modified by the gerundive

Example: "rebus nominandis". *Nominandis* heads two newly added nodes:

1. #Gen, ACT, topic
2. #PersPron, PAT, topic: with textual coreference to *rebus*

ID of *nominandis*: SlaT-005.SCG*LB1.CP--++1.N.-2.1-1.5-1-n8

Newly Added Node(s) Depending on Participles Used as Adjectives

The participles used as adjectives (sempos: adj.denot) require ellipsis resolution of one or more nodes according to the following rule (this rule is similar to and consistent with the previous one, that concerns gerundives):

- present and future participles (active meaning): the node of the Actor (ACT) must be added (with #PersPron t-lemma) and assigned a textual coreference (coref_text) to the head noun in the tree.
Example: 005.SCG*LB1.CP--++1.N.-2.23-2.25-1: "[...] artes aliis principantes [...]".
 - o *aliis*:
 - functor: PAT
 - o newly added node depending on *principantes*:
 - t-lemma: #PersPron
 - functor: ACT
 - coref_text linking to *artes*
- perfect participles (passive meaning): the node of the Patient (PAT) must be added (with #PersPron t-lemma) and assigned a textual coreference (coref_text) to the head noun in the tree
Example: "Lesbia amata a Catullo".
 - o *Catullo*:
 - functor: ACT
 - o newly added node depending on *amata*:
 - t-lemma: #PersPron
 - functor: PAT
 - coref_text linking to *Lesbia*

Obviously, in addition to the newly added nodes mentioned above, all the argument nodes that are missing must be replaced. For instance, in the sentence "Lesbia amata", two nodes must be added, namely the ACT and the PAT (both with t-lemma: #PersPron; the PAT must be textually coreferred with *Lesbia*).

NB: this rule **does NOT cover all the possible cases** and **has not to be applied in a blind way**. There are several cases that do not fit this rule. The semantics of the participle must always be taken into account. See for instance a phrase like "lupus mortuus". In this case, *mortuus* depends on *lupus* and it is a perfect participle. However, the rule does not apply here because *morior* is a deponent and one-valency verb (i.e. it does not have a PAT among its frame elements). In this case, a #PersPron node must be added (dependent on *mortuus*): this node is assigned the functor ACT and gets textually coreferred with *lupus* (literally: "the wolf that has died").

A test to be applied in order to recognize the correct frame elements (and their functors) is to replace the participle with a relative clause:

- "lupus mortuus" -> "lupus qui (ACT) mortuus est"
- "Lesbia amata a Catullo" -> "Lesbia quae amatur a Catullo" -> [passive->active] "Lesbia quam (PAT) Catullus (ACT) amat"
- "artes aliis principantes" -> "artes quae (ACT) principantur aliis (PAT)"

Respectu

In those cases where the word *respectu* functions as a preposition, it is collapsed and it is referred to as an aux.rf of the word (or words, in case of coordination) that it governs in the analytical tree.

Value of grammemes *dispmod*, *verbmod*, *tense* in modal constructions

In the case of infinitive verbs, the value "nil" is assigned by default to the following grammemes: *dispmod* and *verbmod*.

An exception holds in those cases where in the analytical layer the infinitive verb depends on a modal verb (*possum*, *debeo*, *volo*, *oportet*...): in these cases, the node of the infinitive verb in the tectogrammatical layer (which includes the modal one) is assigned the same grammemes of the modal verb.

For instance, see sentence 005.SCG*LB1.CP--++1.N.-3.11-2.12-5: "oportet esse". The node *sum* in the tectogrammatical tree (despite corresponding to the infinitive form *esse*) is assigned the values of the grammemes *dispmod*, *verbmod*, *tense* of its analytical governor *oportet*.

Sempos of *Idem* and *Alius* used as semantic nouns

In those cases where the lemmas *idem* and *alius* are used as a noun, they assigned respectively sempos "n.pron.def.demon" (*idem*) and "n.pron.indef" (*alius*).

See: 005.SCG*LB1.CP--++1.N.-6.1-1.4-1. "eiusdem autem est..."

Ita/Sic...Sicut/Ut

In clause that include constructions like "sic/ita...sicut/ut", all these words (*sic*, *ita*, *sicut*, *ut*) are collapsed under the node of the autosematic word (a verb) that heads the comparative subclause, which is assigned functor CPR (subfunctor: basic).

For instance, "Sic Marcus facit aliquid sicut Paulus (facit)". In this sentence, the newly added node *facio* (functor: CPR) collects the nodes of both *sic* and *sicut*.

The same holds for sentences like "Sicut Marcus facit, ita Paulus (facit)". The node of *facio* (not the newly added one) collects both the nodes of *sicut* and *ita*.

Examples:

- 005.SCG*LB1.CP--++1.N.-5.7-1.8-3
- 005.SCG*LB1.CP--++1.N.-6.4-2.7-2

Values of "Indeftype" grammeme by lemma

The Indeftype grammeme is assigned to the following t-lemmas according to the tables below (NB: one lemma can be assigned different "indeftype" values according to its meaning).

Relat (relative):

- *Qui/quae/quod*

Inter (interrogative):

- *Qui/quae/quod*
- *Quis/quid*
- ...

Indeftype1 (meaning: "someone", "something" /whatever (person or thing):

- *Aliqui/aliqua/aliquod*

- *Aliquis/aliquid*
- *Alius/alia/aliud*
- *Quidam/quiddam*
- *Quidam/quaedam/quoddam*
- *Quis/quid*
- *Quispiam/quidpiam*
- *Quispiam/quaepiam/quodpiam*
- *Quisquam/quidquam*
- *Ullus/a/um*

Indeftype 2

- *Alter/Altera/Alterum*
- *Uter/utra/utrum*
- *Uter/utravis/utrumvis*
- *Utercumque/utracumque/utrumcumque*
- *Uterlibet/utralibet/utrumlibet*

Indeftype 3 (meaning: "whoever", "anyone who" "whatever"):

- *Quicumque/quaecumque/quodcumque*
- *Quilibet/quaelibet/quidlibet*
- *Quilibet/quaelibet/quodlibet*
- *Quisquis/quaequae/quidquid*
- *Quisquis/quaequae/quodquod*
- *Quivis/quaevs/quidvis*
- *Quivis/quaevs/quodvis*
- *Unusquisque/unaquisque/unumquidque*
- *Unusquisque/unaqueque/unumquodque*

Indeftype 4 (in Czech *lecjiaky'* = more than one, every kind):

- *Plerique/pleraeque/pleraque*
- *Complures/compluria*
- *Plurimi/plurimae/plurima*
- *Ceteri/ceterae/cetera*
- *Reliqui/reliquae/reliqua*

Total1 & Total2

Lemmas *totus*, *cunctus*, *universus* and *omnis* can be assigned the "adj.pron.indef", the "n.pron.indef" and the "adv.pron.indef" sempos. In all these cases, they are assigned the "indeftype" grammateme according to the following rule:

- value "total1": totalizing adj./n./adv. referring to the whole of something. Focus on "totality" in the sense of "entirety":
 - *cunctus* (totality as union of all the elements)
 - *totus* (totality considered as a whole)
- value "total2": totalizing adj./n./adv. referring to individuals. Focus on "totality" in the sense of a "set of elements":
 - *omnis* (every element)
 - *universus* (all the elements composing a totality)

Temporary solution! Indeftype total1: Solus/sola/solum

Annotation of participles, gerunds and gerundives in the tectogrammatical level

Participles, gerunds and gerundives have a double nature according to their semantics, because they are nominal (noun or adjective) and verbal at the same time. According to the guide lines of the PDT, all the nodes referring to nominal parts of verbs must be annotated in their <sempos> as verbs ("v" value), in order to make a lexicon valency bank where all verb forms fall together in the same entry and there are not different entries according to the sempos of the form, i. e., one entry for "duco" as a verb and another one for "duco" as an adjective. As any other verb form, all gerunds, participles and gerundives have a valency frame that has to be reconstructed in case it is not expressed in the sentence, i. e. all the arguments that the verb needs must be expressed as #Gen if it is not clear from the context or it is an impersonal construction, or #PersPron if it is already mentioned (in this case the textual coreference must be made).

Grammatemes

Like any other verb, all these forms must be classified with the seven grammatemes that are applied to verbs: deontic modality, verbal modality, interativeness, dispositional modality, aspect, tense, and resultative modality.

According to the guide lines of the PDT, those are the values of all these grammatemes when there is a participle, a gerund or a gerundive in the text:

| GRAMMATEME | VALUE |
|------------------------|---|
| verbal modality | "nil": «As for nodes representing infinitives, participles or transgressives (gerunds), the value of the verbal modality grammateme is nil.» (http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch05s06s04.html#komp6.4.3) |
| deontic modality | "decl" Gerundives: A) having a sense of obligation: "hrt" Example: 005.SCG*LB1.CP---+1.N.-2.1-1.5-1: "multitudinis usus, quem in rebus nominandis sequendum philosophus censet" B) acting as a verbal adjective: "decl" Example: 005.SCG*LB1.CP---+3.N.--.1-1.2-2: "quis modus sit possibilis divinae veritatis manifestandae". |
| dispositional modality | A) Gerunds/Gerundives: "nil" (http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch05s06s04.html#komp6.4.3) B) Participles |

| | |
|----------------------|--|
| | "disp0" |
| iterativeness | according to the semantic of the verb it could be "it1" or "it0" |
| aspect | this is a difficult point in discussion, because Czech participles and infinitives distinguish aspect, but Latin infinitives, gerunds and gerundives don't and only participles do. According to this, only perfect participles would receive "cpl" as aspect, all the other nominal forms of verbs would receive "proc". |
| resultative modality | The "res1" is only applied to a specific Czech construction (http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch05s06s04.html#komp6.4.3) |
| Tense | According to the guide lines, the tense values are only applied to finite verb forms or gerunds, because Czech infinitive and participles don't distinguish tense but aspect. In all those cases the value assigned is "nil". (http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch05s06s04.html#komp6.4.3) In Latin, gerunds and gerundives don't distinguish tense, but participles and infinitives do. So, the tense value must be assigned also to participles and infinitives (instead of "nil") according to consecutio temporum. Roughly speaking, past participles and infinitives are assigned the value "ant"; present participles and infinitives are assigned the value "sim"; future participles and infinitives are assigned the value "post". Gerunds and gerundives are always assigned the tense value "nil". DEVIATION FROM PDT GUIDELINES |

Periphrastic constructions with gerundive

Like in constructions with modal verbs heading infinitives (e.g. "debeo dicere"), in periphrastic constructions formed with a gerundive the inflected verb (a form of lemma *sum*) acts as an auxiliary verb. This is why it does not appear in the tectogrammatical level, but it is removed and absorbed into the node of the gerundive.

This implies the following:

- the values of all the grammatemes of *sum* are assigned to the verb in the gerundive, as well as all the other annotations that the inflected verb may have (like, for instance, `is_member`, `sentmod`, etc.).

Among the grammatemes, ONLY "deontmod" is assigned the original value "hrt" (inherited from the gerundive), in order to keep the sense of obligation of these periphrastic constructions;

- the functor of *sum* is assigned to the gerundive;
- all the nodes depending on *sum* are made dependent on the gerundive.

NB: the ACT of *sum* takes the PAT functor according to the passive meaning of the periphrastic construction with gerundive (this is a tendency: real data can show exceptions);

- the id of *sum* is reported into the "aux.rf" of the gerundive in the usual form (SlaA...-n...).

Examples

005.SCG*LB1.CP---+5.N.-1.5-4.8-2

et ideo demonstrandum est quod necessarium sit homini divinitus credenda proponi etiam illa quae rationem excedunt.

- the values of all the grammatemes (and of other annotations, as well; namely: "sentmod"= "enunc" and "is member"= "1") of *sum* are assigned to *demonstro* (t_lemma of *demonstrandum*), but "deontmod", which is assigned value "hrt";
- the functor PRED is assigned to *demonstro*;
- all the nodes depending on *sum* are made dependent on *demonstro* with their functors, except the cluse "quod necessarium sit", which is assigned functor PAT;
- a node #Gen is newly added depending on *demonstro*, with functor ACT;
- the id of *sum* is reported into the "aux.rf" of *procedo* with this form: SlaA-005.SCG*LB1.CP---+5.N.-1.5-4.8-2-n4.

005.SCG*LB1.CP---+9.N.-2.1-1.4-1:

ad primae igitur veritatis manifestationem per rationes demonstrativas, quibus adversarius convinci possit, procedendum est.

- the values of all the grammatemes (and of other annotations, as well; namely: "sentmod"= "enunc" and "is member"= "1") of *sum* are assigned to *procedo* (t_lemma of *procedendum*), but "deontmod", which is assigned value "hrt";
- the functor PRED is assigned to *procedo*;
- all the nodes depending on *sum* are made dependent on *procedo* with their functors;
- a node #Gen is newly added depending on *procedo*, with functor ACT;
- the id of *sum* is reported into the "aux.rf" of *procedo* with this form: SlaA-005.SCG*LB1.CP---+9.N.-2.1-1.4-1-n16.

Annotation of *videor/videtur*

A) Impersonal Construction (ACT PAT)

"alicui videtur quod/AcI..."

Videtur heads:

- a dative (*alicui*), with functor ACT. If the dative is missing, a #Gen node is newly added with functor ACT
- the quod/AcI construction, with functor PAT

B) Personal Construction (ACT PAT EFF)

"alicui aliquid videtur esse"

"alicui aliquid videtur bonum"

Videor heads:

- a dative (*alicui*), with functor ACT. If the dative is missing, a #Gen node is newly added with functor ACT
- the syntactic subject (Sb afun in the analytical layer), with functor PAT. In the example: *aliquid*
- the nominal predicate (Pnom afun in the analytical layer), with functor EFF. In the example: *esse/bonum*

NB: in cases like "aliquid videtur bonum", we do NOT add a new node heading *bonum* (like an empty verb, or a node with *t_lemma sum*), in order to highlight the copulative function of *videtur*. Instead, in "aliquid videtur esse bonum", *videtur* heads *esse* (EFF), which embodies the copulative function

Consecutive Clauses with *ita...quod* or *ita quod*

<http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch08s07.html>

Case 1: "ita...quod"

A clause introduced by *quod* which is considered consecutive because of one occurrence of *ita* in the sentence (with afun AuxZ in the analytical layer) is annotated as follows (consistently with the above mentioned guidelines of the PDT):

- *ita*: functor EXT
- *quod*: absorbed into the autosemantic node of the head verb of the consecutive clause
- head verb of the consecutive clause:
 - o made dependent on *ita*: this implies to move the node from its position in the analytical layer (which is dependent on the verb of the main clause)
 - o functor RESL

Example: SCG_2, sentence 23: "ita tamen imperfectum quod...invenitur":

- *ita* is assigned functor EXT
- *invenio* is made dependent on *ita* and assigned functor RESL

Motivation: here *ita* is an adverb that modifies a specific lexical item of the sentence (indeed, it is assigned AuxZ in the analytical layer), which must be retained in the TGTS too.

Case 2: "ita quod"

Case:

a clause is introduced by the multiple subordinating conjunction *ita quod*. In the ATS, *ita quod* is annotated as follows:

- *quod*: AuxC
- *ita*: dependent on *quod*, AuxY

TGTS:

- both *ita* and *quod* are absorbed into the autosemantic node of the head verb of the consecutive clause
- the node of the head verb of the consecutive clause is assigned functor RESL
- a new node is added between the head verb of the main clause and the head verb of the consecutive clause, i.e. this node:
 - o depends on the node of the head verb of the main clause
 - o governs the head verb of the consecutive clause
 - o is a qcomplex node of the type #AsMuch
 - o is assigned functor EXT

Motivation: here *ita* is a clause adverb (AuxY) and does not modify a specific lexical item of the sentence, but it is part of a multiple conjunction

Semantic Part-of-Speech of adverbial forms of participle

Although their t-lemma is the base verb, adverbial forms of participles are assigned sempos "adv...".

Motivation: the (only) competitor to sempos "adv..." here is sempos "v", which is discharged because grammatemes of semantic verbs do not apply to adverbial forms of participles.

Example: *convenienter* (SCG_1, sentence 7). Lemma: *convenio*. Sempos: adv.denot.grad.neg

"necesse est" and "oportet" as modal verbs

The constructions of *necesse est* and *oportet*, when followed by a subjective clause (infinitive or finite, e.g. *quod/quia/ut*+subjunctive), behave like a modal verb.

Therefore, the adjective and the verb (in the case of *necesse est*) and the verb (in the case of *oportet*) are absorbed into the node of the head node (i.e. the predicate) of the depending clause.

For example:

Oportet:

a-005.SCG*LB1.CP---+3.N.-4.5-6.8-2

"oportet quod [...] sit modus [...]"

The head verb of the depending clause (*sit*):

- absorbs the nodes of *oportet* and *quod* -> the IDs of *oportet* and *quod* are reported in the aux.rf.
- is assigned the following grammateme values:
 - aspect: "proc"
 - deontmod: "deb"
 - dispmod: "disp0"

- iterativeness: "it0"
- resultative: "res0"
- tense: "sim"
- verbmod: "ind"

Necesse est:

a-005.SCG*LB1.CP--++3.N.-1.2-4.8-2

"[...] *necesse est prius ostendere* [...]"

The head verb of the depending clause (*ostendere*):

- absorbs the nodes of *necesse* and *est* -> the IDs of *necesse* and *est* are reported in the aux.rf.
- is assigned the following grammateme values:
 - aspect: "proc"
 - deontmod: "deb"
 - dispmod: "disp0"
 - iterativeness: "it0"
 - resultative: "res0"
 - tense: "sim"
 - verbmod: "ind"

The deontmode of the depending infinitive is assigned the value "deb". This phenomenon does not apply when the constructions with *necesse est* or *oportet* are nominal. (In those cases the nodes are not absorbed:
-aliquid oportet: *aliquid* is assigned the functor "act" and *oportet* is assigned the corresponding grammatememes and the corresponding functor.
-aliquid necesse est: *aliquid* is assigned the functor "act", *necesse* is assigned the functor "pat" and the corresponding grammatememes and *est* is assigned the corresponding grammatememes and the corresponding functor.

Possibile/Impossibile est + Infinitive Obj

The constructions like "Sb est possibile/impossibile + infinitive", where the infinitive depends on *possibile/impossibile* with a fun Obj in the ATS, are treated as follows in the TGTS.

The nodes of *est* and *possibile/impossibile* are collapsed into the node of the infinitive. Thus, the node of the Sb is made dependent on the node of the infinitive.

In case of *impossibile*, a new node (nodetype: atom; t_lemma: #Neg) is added, depending on the infinitive.

Example: SCG_5, sentence n. 155

[...] *quod possibile est non moveri* [...]

- ATS: *moveri* depends on *possibile* via Obj; *quod* depends on *est* via Sb
- TGTST: *possibile* and *est* collapse into the node of *moveo*, which heads *est* and *non*.

NB: in case the sentence was [...] *impossibile est non moveri* [...], a new #Neg node would be added, depending on the node of *moveo*

Sum + infinitive with meaning: "it is possible to"

When in ATS the verb *sum* heads an infinitive via Obj, this means that the meaning of the clause is "it is possible to...".

In TGST:

- the node of *sum* is collapsed into the node of the infinitive and all the nodes depending on *sum* become dependent on the infinitive
- the node of the infinitive is assigned deontmod "poss"
- all the grammatememes and other features (e.g. *is_member*) of the verb *sum* are assigned to the infinitive

Example: 005.SCG*LB1.CP-1++3.N.11.1-1.3-5

[...] *non sit procedere in infinitum* [...]

- ATS: *procedere* depends on *sit* via Obj
- TGTS: the node of *sit* is collapsed into the node of *procedere*, which is assigned deontmod "poss" and all the other grammatememes and features of *sum*

Ut/sicut-clauses with meaning "for instance"

NB: change in PDT guidelines

According to the PDT guidelines, the "for instance" constructions are considered a mixed apposition.

See here: <http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch06s06s02.html#pic234sour22>

We propose a new way to analyse the "for instance" construction, which is easier: the node of the conjunction (e.g. *ut/sicut*) is absorbed into the node of the word that acts as example, which is assigned functor "CPR" with subfunctor "nr", because none of the available values of the subfunctors of CPR expresses properly the semantics of "for instance".

The dependencies remain the same of the ATS.

Example:

005.SCG*LB1.CP---+2.N.-4.1-1.6-4

"[...] *quidam eorum, ut mahumetistae et pagani* [...]"

The functors assigned to these words are the following:

- *quidam*: "ACT"
- *eorum* (t-lemma #PersPron): "RSTR"
- *ut*: absorbed into the *mahumetista* node
- *mahumetistae* (t-lemma *mahumetista*): "CPR", subfunctor "nr"
- *et*: "CONJ"
- *pagani* (t-lemma *paganus*): "CPR", subfunctor "nr"

Quod quid est

The expression *quod quid est* is a translation of the Greek sentence *to ti en einai*, from Aristotle, where *quod* corresponds to the Greek article *to*.

Treatment of *quod quid est* in TGTS:

- *quod* is absorbed into the head-node of the expression (*sum*)
- a newly added node is made dependent on *sum*; this newly added node is a qcomplex #Gen node and it is assigned functor ACT
- *qui* (ATS: *quid*) is assigned functor PAT

An example is found in 005.SCG*LB1.CP--++3.N.-4.1-1.5-5

Periphrastic constructions to be absorbed into autosemantic nodes

A periphrastic construction can introduce a dependent clause, e.g. "propter hoc quod" (005.SCG*LB1.CP--++4.N.-4.11-1.15-8) or "ex quo" (005.SCG*LB1.CP--++4.N.-2.3-3.5-4), or "secundum quod".

In these cases, the periphrastic construction has to be absorbed into an autosemantic node, as follows:

- all the nodes that form the periphrastic construction get absorbed into the the head node(s) of the dependent clause, i.e. the predicate of a verbal phrase, or the head-noun of a nominal phrase, including possible modifiers of the pronoun, like ipso.

To do it, the analytical IDs of the nodes are reported into the "aux.rf" box of the predicate and the nodes of the periphrastic construction are removed from the TGTS.

Beside the constructions mentioned above ("propter hoc quod" etc.), a number of such constructions is formed with the word *ratione*. In particular, the constructions are the following: (a) *ex ratione alicuius rei*; (b) *in ratione alicuius rei*; (c) *ratione alicuius rei*. In these cases, the nodes for *in/ex* and *ratione* are absorbed into that for *res*.

Example1: 005.SCG*LB1.CP-1++8.N.-3.1-2.4-3

"*ex ratione compositionis*": the nodes for *ex* and *ratione* are absorbed into the node of *compositio* and the analytical IDs of *ex* and *ratione* appear into the *aux.rf* of *compositio* (likewise the ID of *potest*).

Sempos of de-adjectival, de-verbal and de-nominal adverbs

Adverbial forms derived from adjectives, verbs or nouns, i.e. those adverbs whose "t-lemma" is different from the form (e.g. *praecipue: praecipuus; convenienter: convenio; forte: fors*), are assigned the same sempos of their "t-lemma" and the correspondent grammatememes:

Differently, un-inflected adverbs (like *semper, diu, etc.*), i.e. those whose "t-lemma" is identical to the form, are assigned sempos adv...

Example 1

- form: *convenienter*
- t-lemma: *convenio*
- sempos of t-lemma: v
- grammatememes: the ones of a participle present, i.e.:
 - o aspect: "proc"
 - o deontmod: "decl"

- o dispmod: "disp0"
- o iterativeness: "it0"
- o resultative: "res0"
- o tense: "sim"
- o verbmod: "nil"

Example 2:

- form: *praecipue*
- t-lemma: *praecipuus*
- sempos of t-lemma: adj. denot
- grammatemes: the ones of an adjective, i.e.:
 - o degcmp: "pos"
 - o negation: "neg0"

Relative clauses with subjunctive

Relative clauses with the verb inflected in the subjunctive case are assigned any possible value but "decl" for the "deontmod" grammateme.

Most of the times, the value to be assigned is "poss", i.e., "possibility".

The value of the "verbmod" grammateme is always "ind".

Example: 005.SCG*LB1.CP--++5.N.-2.18-1.20-2

"pauca proposuit quae humanae rationis inquisitionem excederent"

excedo is assigned the following grammatemes:

- aspect: "cpl"
- deontmod "poss"
- dispmod "disp0"
- iterativeness "it0"
- resultative "res0"
- tense "ant"
- verbmod "ind"

Relocation of the Atv node (ATS) in the COMPL node (TGTS)

In ATS, a node with afun Atv (NB: only Atv, not AtvV) depends on the node of the noun it agrees with.

In TGTS, a nodes corresponding to an ATS Atv node:

- is (mostly) assigned functor COMPL
- it is moved under the governing node of the clause (i.e. its predicate verb). Motivation: semantically (TGTS), these nodes are adjunct

complementations of the head verb (and not the noun); syntactically (ATS), they depend on the noun because of the agreement

Example: 005.SCG*LB1.CP--++6.N.-2.12-1.15-5

ut idiotae et simplices, dono spiritus sancti repleti, summam sapientiam et facundiam in instanti consequerentur.

In the ATS, the node of *repleti* depends on the node of *et* (because it modifies both *idiotae* and *simplices*).

In the TGTS, the node of *repleo* does not depend on the node of the coordination (as in the ATS), but on the node of *consequor* (relocation of the node).

Repleo is assigned the functor COMPL and it has a *compl.rf.* that links to the nodes of *idota* and *simplex*.

Functor for partitive complementations of superlatives

The functor to be assigned to partitive complementations of superlatives is DIR1.

The definition of DIR1 functor is the following:
<http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch07s04s01.html>

The definition (also) says that "a modification with the DIR1 functor can also have the meaning of a selection from a group of objects; e.g.:

jeden z chlapců.DIR1 (=lit. one of (the) boys)

nejlepší z lidí.DIR1 (=lit. (the) best of men)"

The example at work here is "the best of men", where "of men" is a complementation that represents "a selection from a group of objects"

Example in the IT-TB: 005.SCG*LB1.CP--++6.N.-3.10-6.14-3. "maximum miraculorum"

Negative Modal Verbs

Negative modal verbs like *nequeo* or *nolo* are treated like regular modal verbs, i.e.:

- the grammatememes of the modal verb are assigned to the infinitive verb + the the deontic mode (deont) of the modal verb
- the id of the modal verb must appear in the auxiliary references (*aux.rf*) of the infinitive
- the node of the modal verb is removed

In order to keep the negative meaning of the modal verb, an atomic node with #Neg t_lemma and RHEM functor is newly added, depending on the infinitive verb.

Example: 005.SCG*LB1.CP---+7.N.-4.1-2.3-2

contrariis rationibus intellectus noster ligatur , ut ad veri cognitionem procedere nequeat .

- the grammatemes of *nequeo* are assigned to *procedo* and the deontmod grammateme is assigned the value "poss"
- the id of *nequeo* appears in the aux.rf of *procedo* (and also all the aux.rf comparing in the *nequeo* node come to the aux.rf of *procedo*, like *ut*)
- the node of *nequeo* is removed
- an atomic node with #Neg t_lemma and RHEM functor is newly added, depending on *procedo*

Passive Constructions with infinitive

In (personal) constructions featuring a passive head-verb and a dependent infinitive (*dicuntur esse*), the subject of the passive head-verb in the analytical layer becomes the ACT (or the PAT, according to the voice of the infinitive) of the infinitive verb:

005.SCG*LB1.CP---+6.N.-3.1-1.10-5:

*solum simplicium , sed sapientissimorum hominum , ad fidem christianam convolavit , in qua omnem humanum intellectum excedentia praedicantur , voluptates carnis cohibentur et **omnia quae in mundo sunt contemni docentur ;***

omnia, the subject of *docentur* in the analytical layer, becomes the PAT of *contemno* in the tectogrammatical layer; so the node of *omnis* is moved and depends on *contemno*. The arguments of *doceo* ACT and ADDR are newly added nodes, and *contemno* is the PAT.

Missing correspondence between morphological features and semantic properties

When there is not correspondence between the morphological features of a word and its semantic properties (like for pluralia tantum), the latter must be reflected through the grammatemes.

E.g. the gender of the noun *animal* is neuter, but semantically it is an animate; so the grammateme for gender assigned is "anim", corresponding to the property of animacy of the noun.

#Asmuch

According to the PDT tectogrammatical rules (p. 805 and ff.; <http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch08s07.html>), a node with the t-lemma substitute #Asmuch and a corresponding functor (usually, EXT) and subfunctor "basic" must be added when the expression referring to the high or low degree of an aspect of the governing event is omitted in the surface form of the sentence. The node with the t-lemma substitute #AsMuch stands in place of the expression referring to the high or low degree (e.g.: *tak málo* (=so few/little), *tak špatně* (=so badly), *tak dobře* (=so well), *tak hodně* (=so much/many), *tak moc* (=so much/many)).

In the tectogrammatical annotation of Latin, the node #Asmuch is added in the following cases:

1. when the introducing element is part of the connective of the RESL clause (like in the multiple subordinate conjunction *ita quod: ita* depends as "AuxY" on *quod* in the analytical layer):
sentence 005.SCG*LB1.CP-1++0.N.-1.1-1.6-7: "haec autem consideratio [...], superflua fortasse quibusdam videbitur, qui asserunt quod deum esse per se notum est, ita quod eius contrarium cogitari non possit, et sic deum esse demonstrari non potest."
In this case a new node #Asmuch is added depending on *sum* (lemma of *est*) and the verb *cogito* (lemma of *cogitari possit*) depends on this newly added node with functor RESL (and the nodes of *ita* and *quod* are absorbed in the node of *cogito*).
2. when the introducing element is missing in the governing clause (for instance, there is no *ita*, *tantum* etc. in the sentence) and the context shows that the depending clause has a functor value RESL.:
sentence 005.SCG*LB1.CP-1++0.N.-2.9-8.10-7: "ut sic saltem in intellectu iam deum esse oporteat."
In this case, the preceding predicate (*hoc autem formatur*) must be reconstructed by ellipsis resolution. According to the context, a node #Asmuch is built and made dependent on *formo* (lemma of *formatur*). The node of *sum* (lemma of *esse oporteat*) depends on #Asmuch by RESL. The node of *ut* gets collapsed into the node of *sum*.

Ne as a conjunction absorbed by the verb

Like all the conjunctions, the conjunction *ne* (AuxC in the analytical layer) is absorbed into the node of the head-verb of the clause introduced by *ne*.

This makes the semantic feature of negation carried by *ne* to be lost in the tectogrammatical level. This is solved by adding a new node #Neg.

E.g. 005.SCG*LB1.CP---+8.N.-3.8-4.11-2

sed ne te inferas in illud secretum , et arcano interminabilis nativitatis non te immergas , summam intelligentiae comprehendere praesumens

The conjunction *ne* is absorbed into the nodes of the verbs *infero* and *immergo*, and a #Neg node is newly added, depending on *infero*, in order to keep the negative sense of the sentence.

NB A #Neg node is not newly added as depending on *immergo* (or common to both verbs, i.e. depending of the copula *et*), because the negation of *immergo* is already expressed by *non* (depending on *immergo*). Otherwise, the #Neg node newly added should have been common to both verbs, and should be dependent on the copula *et*. This is quite common when coordinate constructions depend on *ne*, i.e. “*ne* ... 1st-verb *et non* 2nd-verb”.

Pars in periphrastic preposition

The noun *pars* can take part in the periphrastic preposition *ex parte alicuius rei*.

Both the nodes of *ex* and of *pars* are absorbed into the node of the noun in genitive. Their ids appear as auxref of the noun in genitive, as if they were one preposition.

Relation between m-lemma and t-lemma

According to the section 4.2 in the PDT guidelines about the relation between a node's t-lemma and m-lemma and between its t-lemma and wordform (<http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch04s02.html>), the following are the correspondances between the m-lemma of some pronouns & quantificatives and their t-lemma.

e.g. the nodes with m-lemma *aliqui* are assigned t-lemma *qui*.

| m-lemma | t-lemma |
|----------------|----------------|
| aliqui | qui |
| aliquis | quis |
| duplex | duo |
| qualiscumque | qualis |
| quantuscumque | quantus |
| quicumque | qui |
| quidam | qui |
| quilibet | qui |
| quisquis | quis |
| seipse | ipse |
| singulus | unus |

| | |
|-------------|------|
| trinus | tres |
| unusquisque | quis |
| uterque | uter |

Coordination of nodes with different functors

Since the rule is not trivial, see:

<http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch06s06s01.html#pic234sour14>

There are cases where two or more coordinated nodes are assigned different functors.

This contradicts the principle of coordination, which says that the coordinated elements have to be equal.

The PDT guidelines state to make an ellipsis resolution, i.e. to coordinate the head-verb (on which the two, or more coordinated elements depend) with a copy of it and to make each of the coordinated elements with different functors depend of each head-verb.

Here, we part from the PDT guidelines, allowing one or more different functors to be coordinated. This is for two main reasons: (a) it is more simple (no new nodes are added); (b) it faces the truth (there is no real ellipsis working here); (c) it preserves better the information (see the query below to search for all such cases, that the PDT-style loses).

Fictional example: "I run fast and with my brand new shoes". Here, a MANN ("fast") and a MEANS ("with my brand new shoes") are coordinated.

List of some cases in the IT-TB:

| Phrase | Functors | Elements |
|------------|-----------------|---|
| SCG_1/ 167 | MEANS and AUTH | efficacia (MEANS)- violencia (MEANS)- promissio (MEANS)- tyrannis (AUTH) |
| SCG_2/97 | MANN and MEANS | naturalis (MANN) - #PersPron (MEANS) |
| SCG_3/1 | TWHEN and MEANS | unus (TWHEN)- #PersPron (MEANS) |
| SCG_3/3 | TWHEN and MEANS | unus (TWHEN)- #PersPron (MEANS) |
| SCG_3/121 | TWHEN and MEANS | unus (TWHEN) - ratio (MEANS) |
| SCG_3/186 | TWHEN and MEANS | semper (TWHEN) - pars (MEANS) |

Query to be used to retrieve all such cases:

```
t-node $n0 :=  
[ nodetype = "coap",  
t-node $n1 :=  
[ is_member = 1 ],  
t-node $n2 :=  
[ functor != $n1.functor, is_member = 1 ] ];
```

***Tanto-quanto, tantum-quantum* (distribution and uses)**

The adverbs *tanto-quanto* can appear in two different syntactic constructions:

- *tanto* and *quanto* are part of two paratactic clauses, coordinated by a comma: 005-SCG*LB1.CP-1++4.N.-2.9-5.12-1
- *quanto* is part of a subordinate clause depending on a main one (where *tanto* occurs). The predicate of the subordinate clause (where *quanto* occurs) is assigned a fun "Adv": 005-SCG*LB1.CP-1++8.N.-5.1-2.4-2

According to these possible syntactic constructions, the tectogrammatical annotation of *tanto-quanto* is different:

- in the first case, both adverbs are assigned the functor EXT and the functors of the head verbs are assigned the functor value according to their semantic role in the sentence.
- in the second case, both adverbs are assigned the functor EXT, but the head verb of the *quanto* sentence is assigned the functor value CPR, with subfunctor "basic".

NB: the second structure is also possible with *tantum-quantum*, but it is not frequent.

Other uses of *tantum*

Tantum can also be used:

- as a verbal or noun modification that introduces consecutive sentences: in this case, it is assigned the functor value EXT and the

subordinate clause (usually introduced by *ut*) depends on *tantum* with the functor value RESL: 005-SCG*LB1.CP--+5.N.-4.3-3.7-9.

- as a verbal or noun modification with no consecutive value but with the meaning "very". In this case, it is assigned the value EXT. This is the most frequent use of *tantum*: 005-SCG*LB1.CP-1++3.N.22.9-5.11-1.

Other uses of *quantum*

Quantum can appear with a comparative meaning in a construction similar to the *tantum-quantum* construction, where the lemma *tantum* is not present. In this case, the head verb of *quantum* is assigned the functor value CPR, with subfunctor "basic": 005-SCG*LB1.CP-1++8.N.-3.1-2.4-3

Quantum can also be a part of a periphrastic construction (*quantum ad aliquam rem*); in this case, in the ATS *quantum* depends on *ad* as an AuxZ. In TGTS, the node of *quantum* is collapsed into the head noun (just like the node of *ad* is) and this is assigned the functor value REG:005-SCG*LB1.CP-2++0.N.12.11-3.13-1

Opus est aliqua re

The periphrastic construction *opus est aliqua re* is annotated in the ATS in the following way:

- the form of the verb *sum* is the head-node
- the noun *opus* depends on *sum* via Sb
- the ablative depends on *opus* via Atr (because all the nominal modifications in the ATS are assigned the afun value "Atr")

Example: 005.SCG*LB1.CP-4++3.N.13.5-2.9-4.

In the TGS, this construction is treated as follows:

- the node of *sum* is collapsed into the node of *opus*
- the node of *opus* heads the whole structure
- a #Gen node depending on the node of *opus* is newly added with the functor value ACT, to render the impersonality of the construction
- the node of the ablative depends on the node of *opus* with the functor value PAT

NB: the node of *opus* is assigned the value "v" for the grammateme "sempos"; the others grammatemes are filled according to the values that would be assigned to *sum*, except "deontmod", which is assigned "deb".

Example: 005.SCG*LB1.CP-4++3.N.13.5-2.9-4

In this case the node of *opus* is assigned the values:

- "proc" for aspect
- "deb" for deontmod
- "disp0" for dispmod
- "it0" for iterativeness
- "res0" for resultative
- "v" for sempos
- "sim" for tense

- "ind" for verbmod

NB: no entry for *opus est aliqua re* is added in the valency-lexicon, since no periphrastic construction is reported there.

Relative clauses with final, concessive, or other values

The relative clauses which have a final, concessive or other type of semantic value, are moved from the nominal head to the verbal head above the nominal one, because these kinds of values affect the predication, not the noun phrase.

In such clauses, the relative pronoun maintains the grammatical coreference with the (nominal) node it refers to, but the head of the relative clause (i.e. its predicate) is moved from the nominal head to the verbal head.

Example: a-332 (Caes, Gall. 2,2): His nuntiis litterisque commotus Caesar duas legiones in citeriore Gallia novas conscripsit et in ita aestate in ulteriorem Galliam qui deduceret Q. Pedium legatum misit.

In this sentence, the relative clause is "qui deduceret" and the relative pronoun stands in grammatical coreference with *Pedium* (lemma *Pedius*), but since it has a final sense ("in order to conduct -them to the Gaul-"), the head verb of this clause (*deduco*) is moved and it is made dependent on *mitto* (the PRED) instead than on *Pedius*.

T_lemma of the pronoun *is, ea, id*

The forms of the demonstrative pronoun and adjective *is, ea, id* have t_lemma "is" (and not #PersPron) in accordance with the treatment of all the other demonstrative pronouns and adjectives (*hic, ille, isdem, ipse*).

Some special cases of annotation of subordinate clauses

Problematic issue

Subordinate clauses with the syntactic function of subject or object of a verb (in ATS) that are respectively not ACT, or PAT (or any other functor) of that verb in TGTS.

NB: so far, this issue concerns subject or object subordinate clauses only because we have not found evidence for other afun. But, in principle, this is possible.

Following are the specific cases concerned:

(A)

Subordinate clauses featuring the relative pronoun *qui* in nominal function.

How to treat them in TGST:

- 1- a newly added node #PersPron is made dependent on the head verb of the main clause. This newly added node is assigned its functor according to the semantic role of the depending clause (e.g. if Sb of an active verb: usually, ACT). The grammatemes are assigned in accordance with the morphological features of the relative pronoun of the subordinate clause (person, gender, number, politeness);
 - 2- the subordinate clause is transformed into a relative clause depending on the #PersPron. Its head verb is, thus, assigned functor RSTR;
 - 3- a grammatical coreference is made from the relative pronoun in the subordinate clause to the newly added node #PersPron in the main clause.
- N.B.! This is the only case in which a #PersPron (not for the 1st or the 2nd person) can have no textual coreference.

Example:

005.SCG*LB1.CP---+1.N.-2.1-1.5-1

"[...] sapientes dicantur qui res directe ordinant et eas bene gubernant ."

- 1- a newly-added-node #PersPron is made dependent on the head verb "dico" with the semantic role PAT; the grammatemes are: gender "anim", number "sg", person "3" and politeness "basic"
- 2- the subordinate clause "qui res directe ordinant et eas bene gubernant" is made dependent on the #PersPron as RSTR, i.e. functor RSTR is assigned to the two coordinated predicates (*ordino* and *guberno*), which depend on the COAP node *et* (which, in turn, depends on the newly added node #PersPron);
- 3- a grammatical coreference is made between the relative *qui* and the newly added node #PersPron.

(B)

Subordinate clauses featuring an indefinite pronoun in nominal function (e.g. *quisquis*, *quicumque*, etc.).

How to treat them in TGST:

- 1- the indefinite pronoun is made dependent on the head verb of the main clause. It is assigned its functor according to the semantic role of the depending clause (e.g. if Sb of an active verb: usually, ACT)
- 2- the subordinate clause is transformed into a relative clause depending on the indefinite pronoun. Its head verb is, thus, assigned functor RSTR
- 3- a new node is added (depending on the head verb of the relative clause), with grammatical coreference to the indefinite pronoun. Grammatemes: "inher" for gender, number and person, and "relat" for indeftype. This node is assigned its functor according to its semantic role in the depending (now, relative) clause.

Example:

005.SCG*LB1.CP---+7.N.-3.8-3.10-1

"quicquid igitur principiis huiusmodi contrarium est, divinae sapientiae contrariatur"

- the indefinite pronoun *quicquid* (lemma *quis*) is made dependent on the verb *contrariatur* with functor ACT
- the clause whose head is *sum* (*contrarium est*) is made dependent on the node of *quis* with functor RSTR
- a new node is added depending on *sum* with functor ACT and with grammatical coreference to the indefinite pronoun (node *quis*).

(C)

Subordinate clauses featuring an indefinite pronoun in adjectival function, depending on a noun (e.g. *quicumque, qui, quis*, etc.).

How to treat them in TGST:

- 1- the noun which the indefinite pronoun in adjectival function depends on, is made dependent on the head verb of the main clause. It is assigned its functor according to the semantic role of the depending clause (e.g. if Sb of an active verb: usually, ACT)
- 2- the indefinite pronoun in adjectival function depends on the noun as a RSTR
- 3- the subordinate clause is transformed into a relative clause depending on the noun. Its head verb is, thus, assigned functor RSTR
- 4- a new node is added (depending on the head verb of the relative clause), with grammatical coreference to the noun. Grammatemes: "inher" for gender, number and person, and "relat" for indeftype. This node is assigned its functor according to its semantic role in the depending (now, relative) clause.

Example:

005.SCG*LB1.CP--++2.N.-5.1-1.3-1

"simul autem veritatem aliquam investigantes ostendemus qui errores per eam excludantur"

- the noun *error* is made dependent on the verb *ostendo* with functor PAT
- the indefinite pronoun in adjectival function *qui* depends on *error* with functor RSTR
- the clause whose head is *excludo* (*per eam excludantur*) is made dependent on the node of *error* with functor RSTR
- a new node is added depending on *excludo* with functor PAT and with grammatical coreference to the noun (node *error*).

Not Collapsing Modal Verbs

When the infinitive subordinate clause depending on a modal verb and the modal verb do not share the same syntactic subject, the node of the modal verb is not collapsed into the verb of the infinitive subordinate clause. The value for the grammateme *deontmod* of the infinitive verb in the subordinate clause does not change (the original value "decl" for an infinitive is kept).

The functor of the infinitive subordinate clause is PAT.

This operation must be done to keep the information regarding to the different subjects of both (the modal and the infinitive) verbs.

Example:

quousvis opes voluisse contra illius potentiam crescere (Sallust, *De coniuratione Catilinae*, XVII)

In this sentence, the main verb is *voluisse* (lemma *volo^velle*, a modal verb), and its subject is elided, but it is Crassus, according to the context. The infinitive clause *quousvis opes contra illius potentiam crescere* depends from it. The head verb of the infinitive clause is *crescere* (lemma *cresco*) and its subject is *opes* (lemma *ops*).

In this case, the modal verb *volo^velle* is not made collapsing into the node of *cresco*. The value of *deontmod* for *cresco* does not change to "vol" (it remains "decl"). The infinitive subordinate clause depends on the

verb *vollo^velle* with functor PAT.

Special Cases

Sentence: 005.SCG*LB1.CP--++6.N.-3.1-1.10-5 (SCG_1, n. 167)

quibus inspectis, praedictae probationis efficacia, non armorum violentia, non voluptatum promissione, et, quod est mirabilissimum, inter persecutorum tyrannidem, innumerabilis turba non solum simplicium, sed sapientissimorum hominum, ad fidem christianam convolavit, in qua omnem humanum intellectum excedentia praedicantur, voluptates carnis cohibentur et omnia quae in mundo sunt contemni docentur;

This sentence features a coordination of phrases which must be assigned different functors, which is in principle not permitted by guidelines:

- *praedictae probationis efficacia,*
- *non armorum violentia,*
- *non voluptatum promissione, et,*
- *inter persecutorum tyrannidem*

The first three phrases are assigned the functor MEANS, but the fourth is assigned the functor LOC, with subfunctor "betw".

The particular semantic structure can be appreciated only in the TGST, because in the ATS all phrases are assigned the afun "Adv".

Breaking the rule that states that coordination must hold between nodes with the same functor only is here meaningful, since it shows a *variatio* by the author.