



PDT – Tectogrammatical Layer Grammatemes

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PDT: t-layer

Goal:

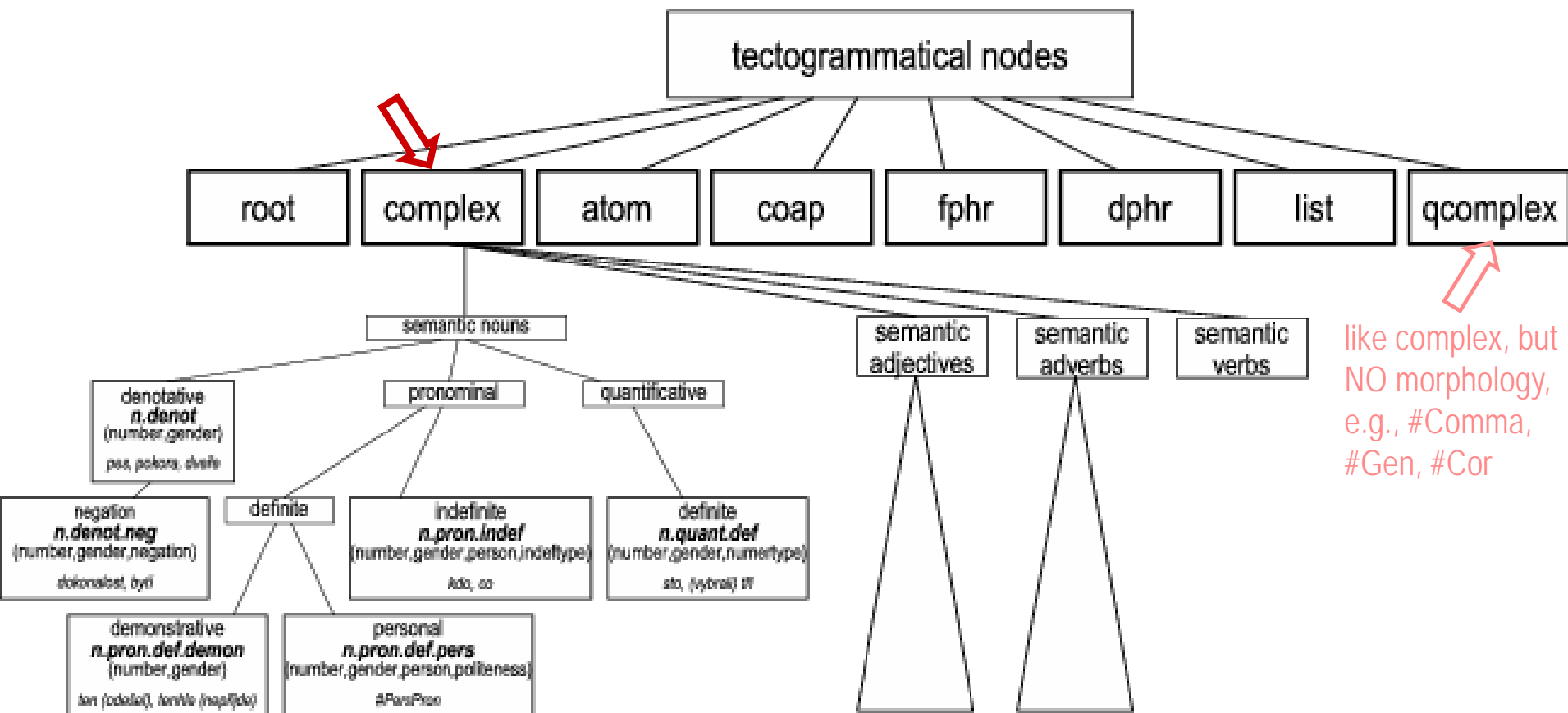
- to describe deep, semantic structure of a sentence
~ a sentence meaning
- disambiguated
- dependency 'tree'
- information on
 - lexical items: **t-lemma** (primarily)
 - relations between lexical words ~ **deep structure:**
functors + subfunctors
 - **grammatemes**
 - coreferential links
 - topic focus articulation: linear order + tfa attribute
(cz: aktuální členění)
- PDT 3.0: multiwords expressions, discourse relations, genre specif.

documentation: <http://ufal.mff.cuni.cz/pdt3.0/documentation>

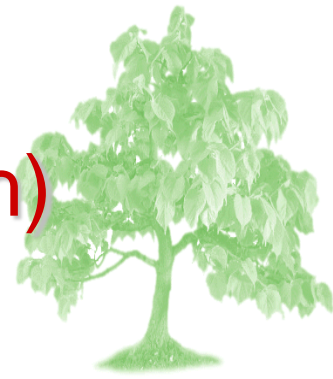


PDT: node types

- eight node types ... attribute ***nodetype***
- defined on the basis of a *t-lemma* and/or a *functor*

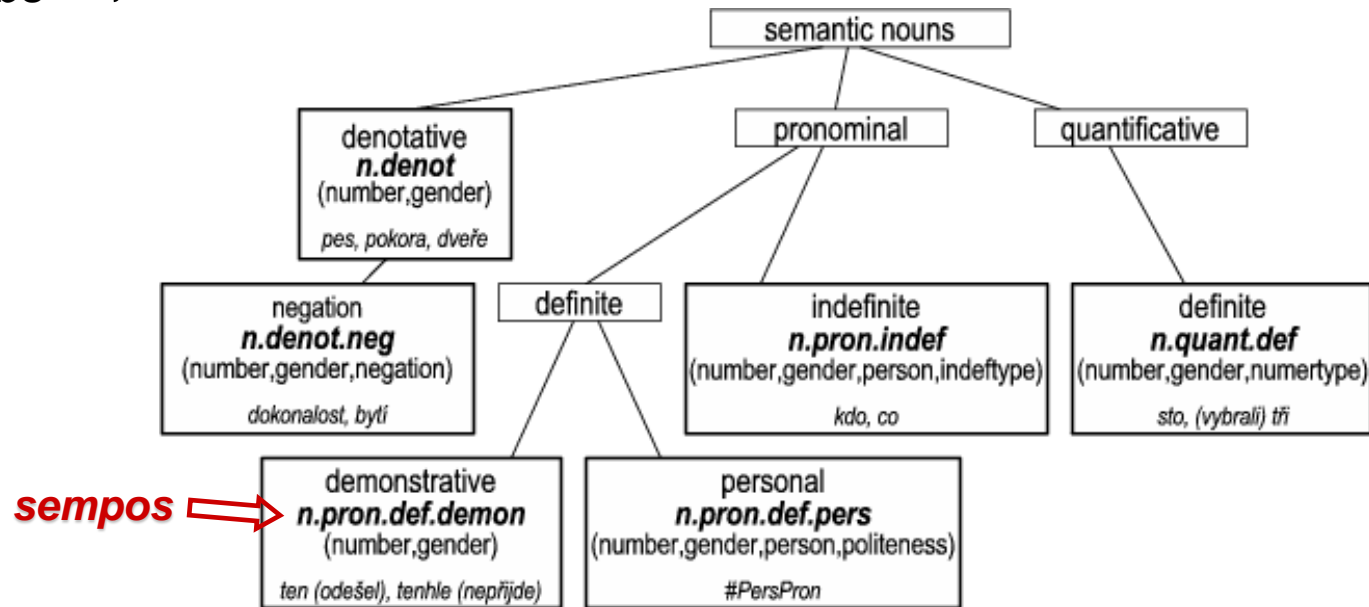


PDT: system of grammatememes (for Czech)



- only for *complex nodes*
- to capture meaning of morphological categories
- complex nodes
- attribute *gram/sempos*
 - semantic nouns
 - semantic adjectives
 - semantic adverbs
 - semantic verbs

} further classified



PDT: system of grammatememes (cont.)



based on a value of sempos

⇒ 15 grammatememes:

- number, gender, person, politeness, **typgroup*** (SemN)
- numertype (SemN, SemAdj)
- indeftype, negation (SemN, SemAdj, SemAdv)
- degcmp (SemAdj, SemAdv)
- ~~verbmod~~ → **factmod***, deontmod, aspect, tense, iterativeness, **resultative**, **dispmod**, **diatgram*** (SemV)

(attribute gram ... technical attribute gathering all grammateme attributes)

+ sentmod

* PDT 3.0

PDT: system of grammatememes (cont.)



values of grammatememes:

- **basic values** ... values inherent to an individual grammateme
 - two (or more) values
e.g. *Viděl jen dva.* [gender=anim|inan] (not fem,neut) [He saw only two of them.]
- **special values**
 - **nr** ... all values may be assigned to
(i.e., all basic values are possible in the given case)
e.g. *Vypral si kalhoty.* [number=nr] [He washed his pants]
 - **nil** ... none of the basic values is suitable (limited)
 - **inher** ... the value is inherited from the coreferred node
(for grammatical coreference)
e.g. reflexive *se*, *svůj*, relative pronouns

Grammateme *sentmod*



sentential modality

... whether the sentence expresses an assertion, a question, a demand etc

- **enunc:** declarative *Petr tam nepřišel.* [*Petr didn't come.*]
Škola. [School.]
- **excl:** exclamative *Vyhráli jsme!* [We won!]
Auto! [Car!]
- **desid:** desiderative *At' se vám daří!* [*I wish you all the best!*]
Hodně štěstí! [Good luck!]
- **imper:** imperative *Přijďte včas!* [Come in time!]
Pozor! [Watch out!]
- **inter:** interrogative *Kdy dnes přijdete?* [When do you come?]
Škola? [School?]

nodes representing the main verb or noun ~~and the coordination roots~~

root nodes of subtrees representing direct speech;

root nodes of subtrees representing a parentheses (PAT)

root nodes of title subtrees (labeled with the functor *ID*),

Grammateme *number*



- semantic nouns
- values ... **sg**, **pl**
- prototypically corresponds to the morphological number
- BUT
 - pluralia tantum
e.g. *jedny kalhoty.sg* [one pair of trousers], *dvoje kalhoty.pl* [two pairs of trousers]
 - polite form (cz 'vykání')
e.g. sg: *vy.sg *jste* přišel*

Grammateme *gender*



- semantic nouns
- prototypically corresponds to the morphological gender
 - **anim**: *soused* [neighbor], *pes* [dog], (*přišli*) *tři* [three (of them came)]
 - **inan**: *hrad* [castle], *nápad* [idea], *tisíc* [thousand]
 - **fem**: *dívka* [girl], *děti* [children], *dveře* [door], *miliarda* [billion]
 - **neut**: *děvče* [girl], *dítě* [child], *kolo* [wheel], *ono* [it], *sto* [hundred], *co* [what]

Grammateme *person*



- definite personal and indefinite pronom. semantic nouns, i.e. pronouns referring to an object of communication (third person), to the speaker or hearer (first and second person)
- values:
 - 1: *Já tam nepůjdu.* [I will not go there.], *náš návrh* [our suggestion];
 - 2: *Tvůj názor nesdílím.* [I don't share your view]
Vy už jste se přihlásili. [You.pl have already registered]
Vy už jste se přihlásil. [You.sg have already registered]
 - 3: *On sem nepřijde.* [He will not come], *jeho názor* [his opinion]
- indefinite semantic nouns
 - typically the value 3
unless different subject-predicate agreement

e.g. *Verše, které kdekdo známe...* [Poems which everybody/whoever know.**1.pl**]
Zachraň se, kdo můžeš [Save yourself who can.**2.sg**]

Grammateme *typgroup*



- the semantic opposition of the pair/group meaning
vs. meaning of single entities

kalhoty [trousers], *ruce* [hands, arms], *klíče* [keys], *boty* [shoes]

- plural forms refer rather to a pair/group than to a larger amount of single entities
- combination with numerals → grammaticalized
dvoje boty [two-pairs-of shoes] set numeral vs. *dvě boty* [two shoes] cardinal
- values:
 - **group:**
 - **single:**

semi-automatical annotation

→ the annotation of number is affected

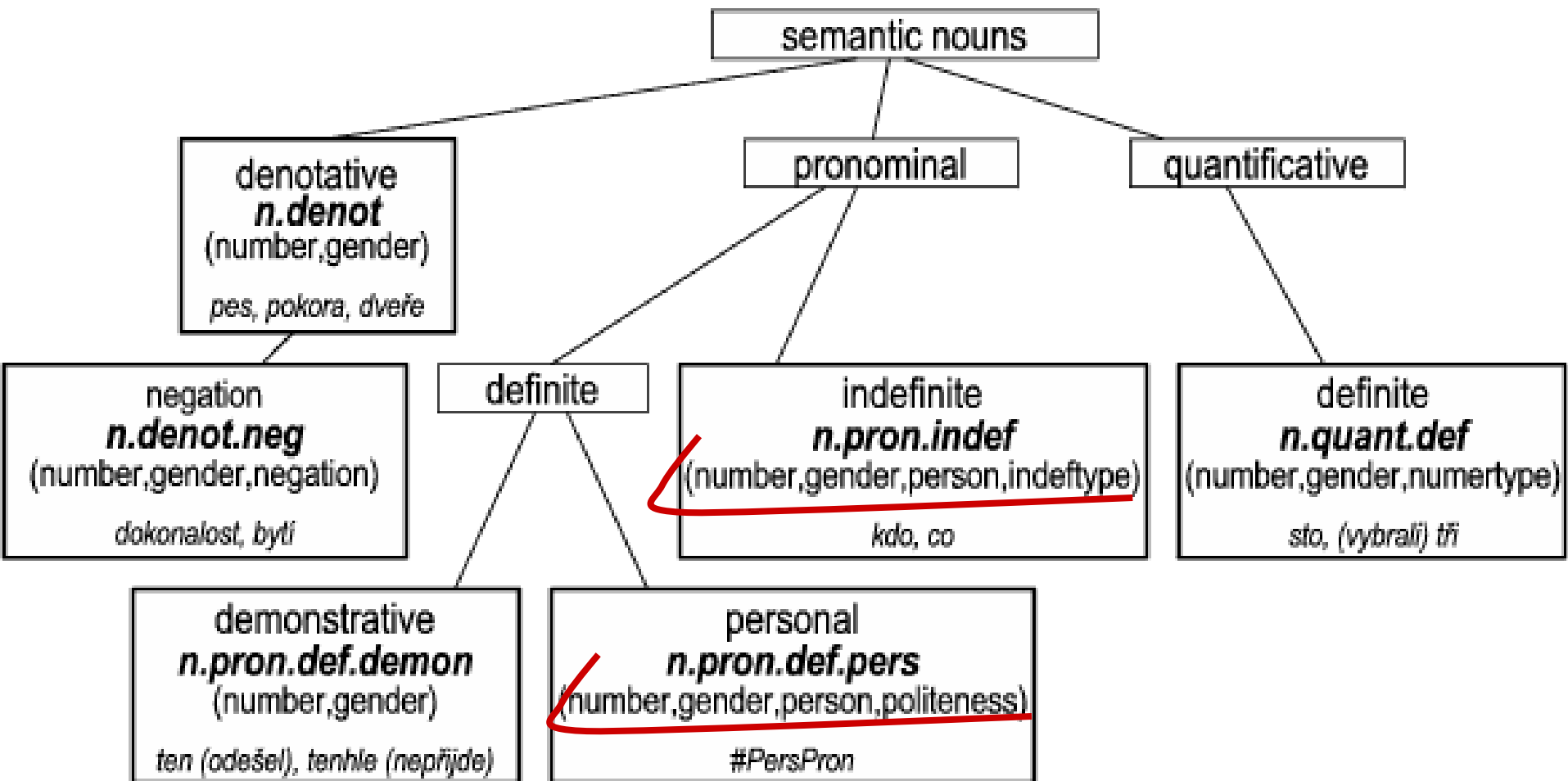
sg.group: one pair/group, a plural form of nouns ... (a pair of) trousers; cigarettes (a package)

pl.group: more pairs/groups, a plural form of nouns ... (more pairs of) trousers; cigarettes
(more packages)

nr.group: one or more pairs/groups, a plural form of nouns,

sg.single: one entity, a singular form of nouns

pl.single: more entities, expressed by a plural form of nouns



Grammateme *politeness*



- polite form of addressing (cz 'vykání')
- t-lemma #PersPron
- values

- **polite:** ('vykání')

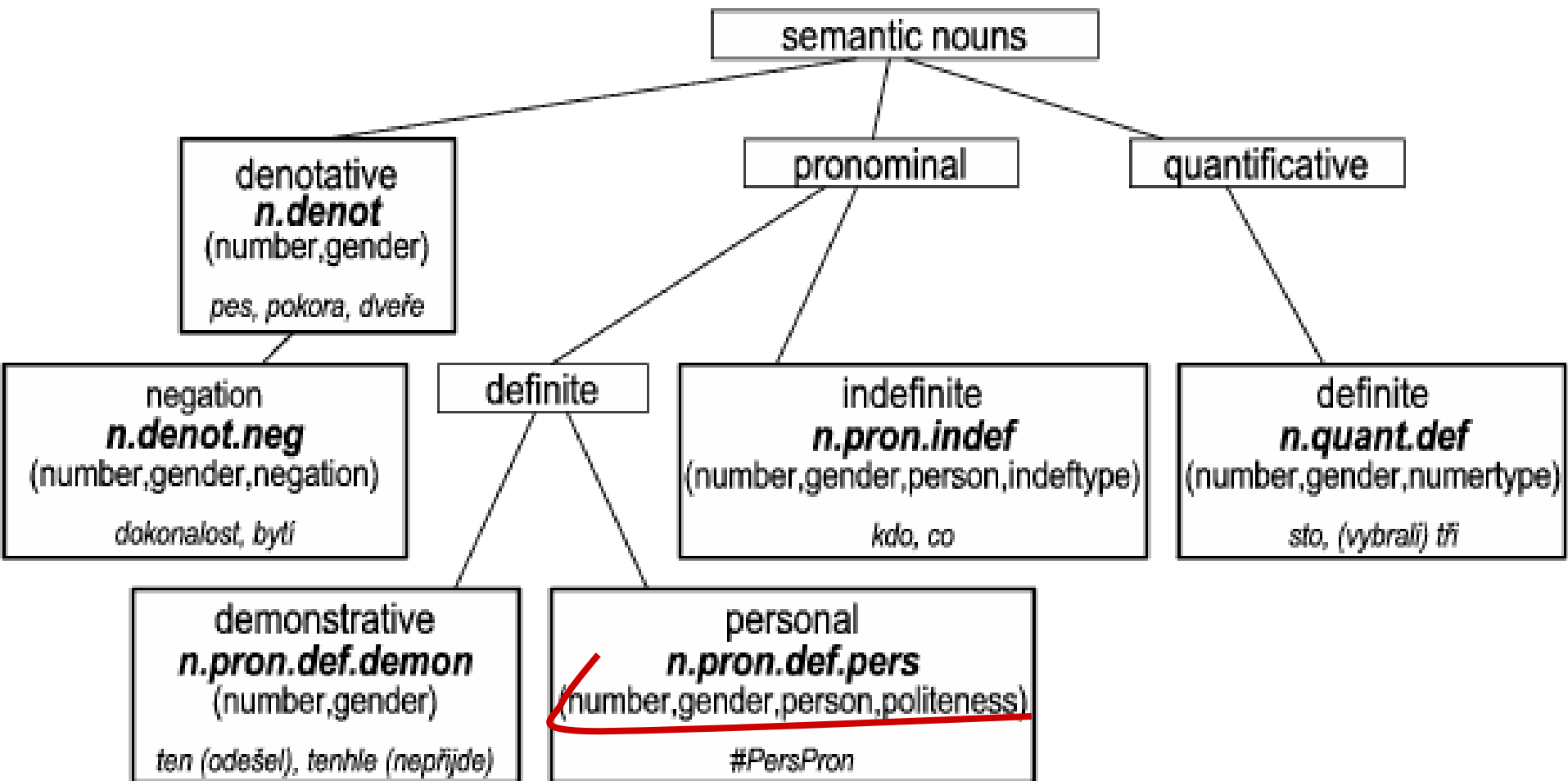
Vy už *jste se přihlásil*. [You.sg have already registered]

- **basic:**

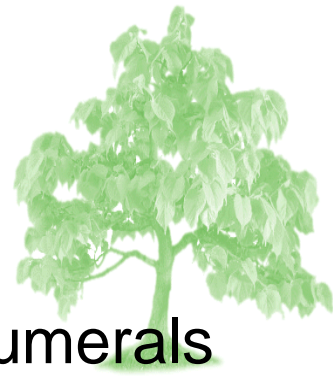
Já tam *nepůjdu* / On tam *nepůjde*. [I / He will not go there],

Ty *bys tam neměl chodit*. [You.sg should not go there]

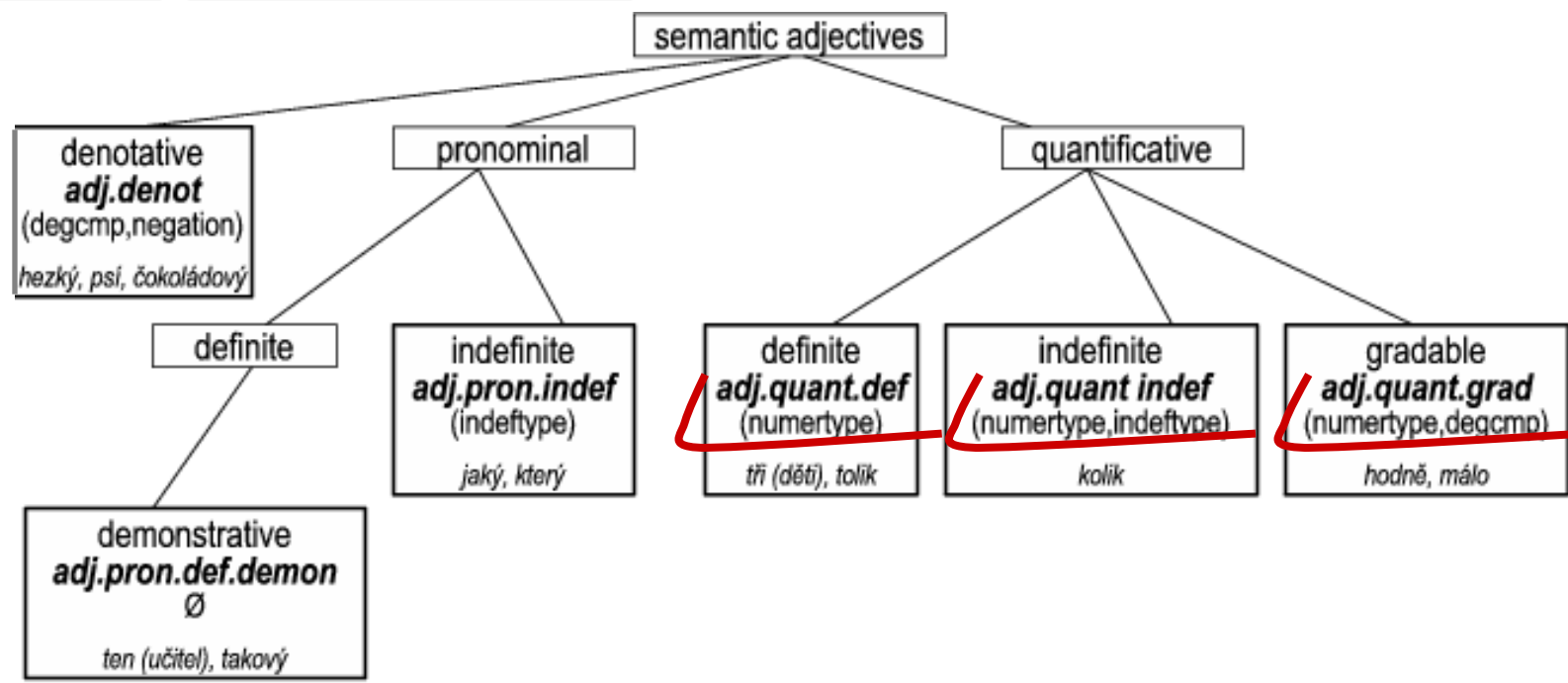
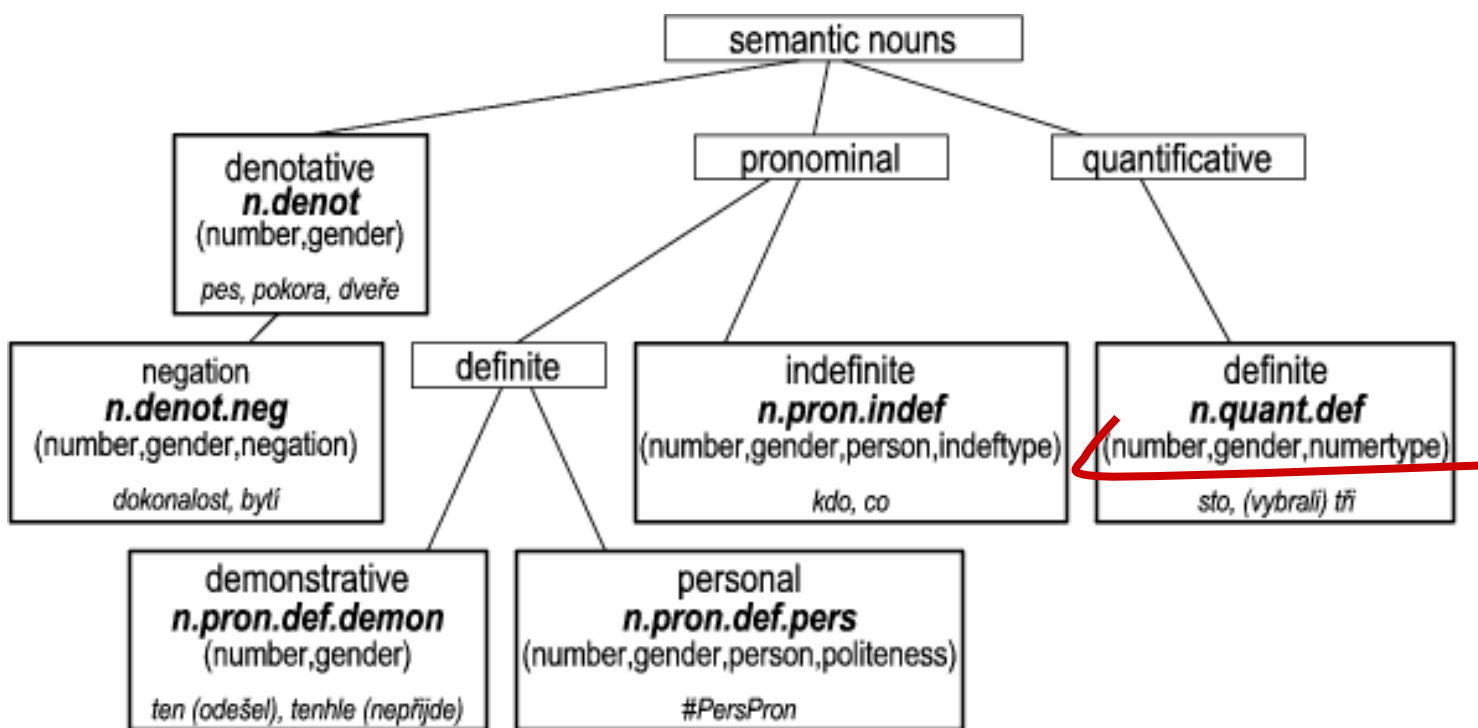
Vy už *jste se přihlásili*. [You.pl have already registered]



Grammateme *numertype*



- lexical derivation ... ordinal, sort, set, and fraction numerals
- t-lemma + numertype \Rightarrow m-lemma
- values
 - basic: cardinal numbers
(cz základní) ... *tři, sto, kolik* [three, hundred, how many]
 - **set**: (cz souborové) ... *troje, stery, kolikery*
 - **kind**: (cz druhové) ... *trojí, sterý, kolikerý*
 - **ord**: (cz řadové) ... e.g. *třetí, stý, kolikátý*
 - **frac**: (cz dílové) ... *třetina, setina*

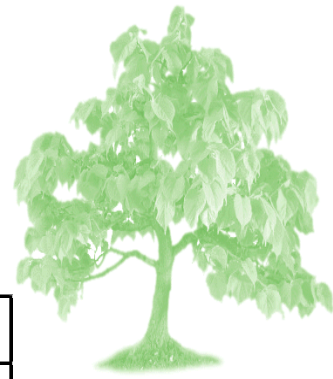


Grammateme *indef*type

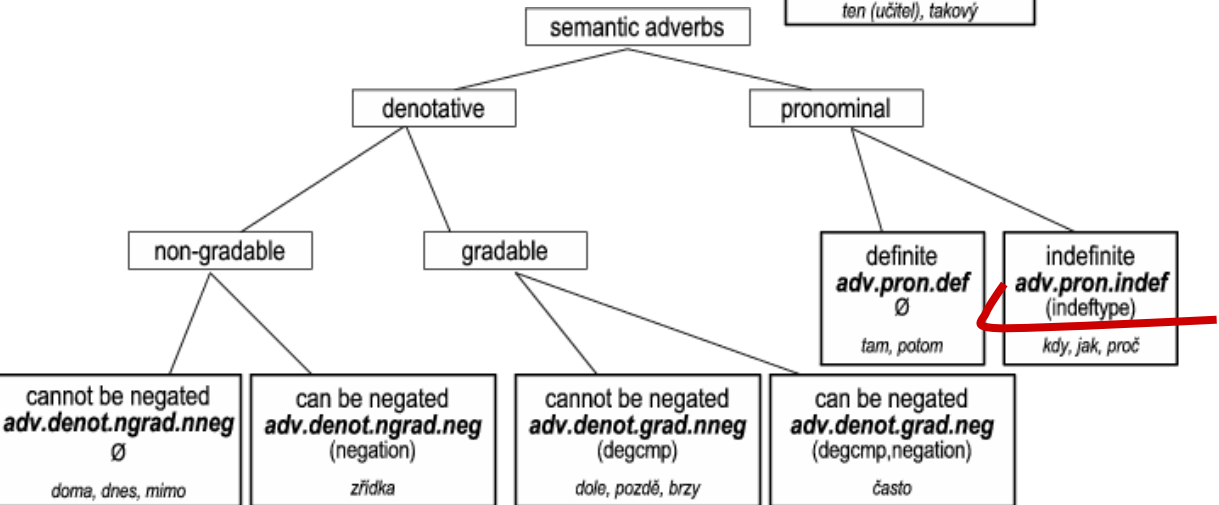
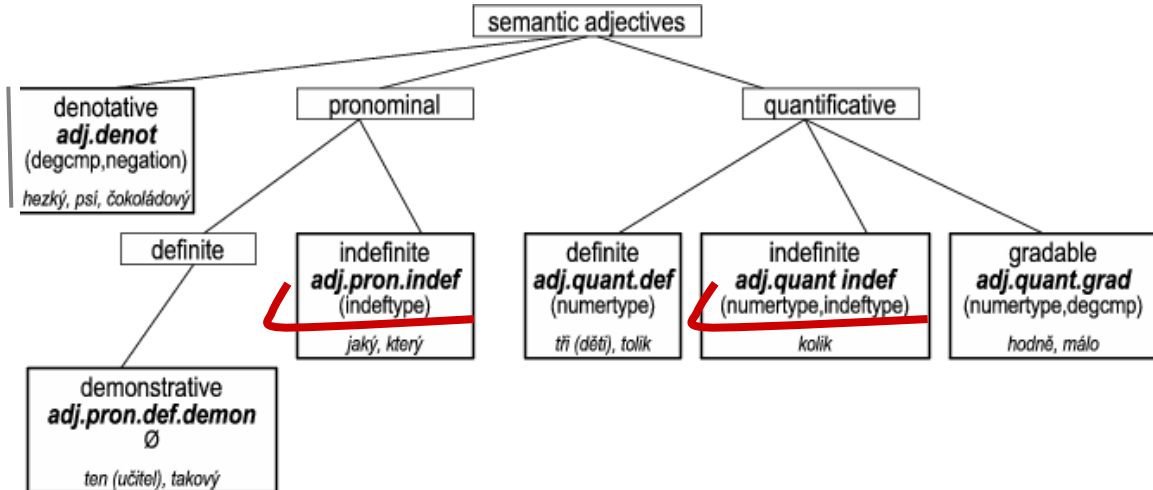
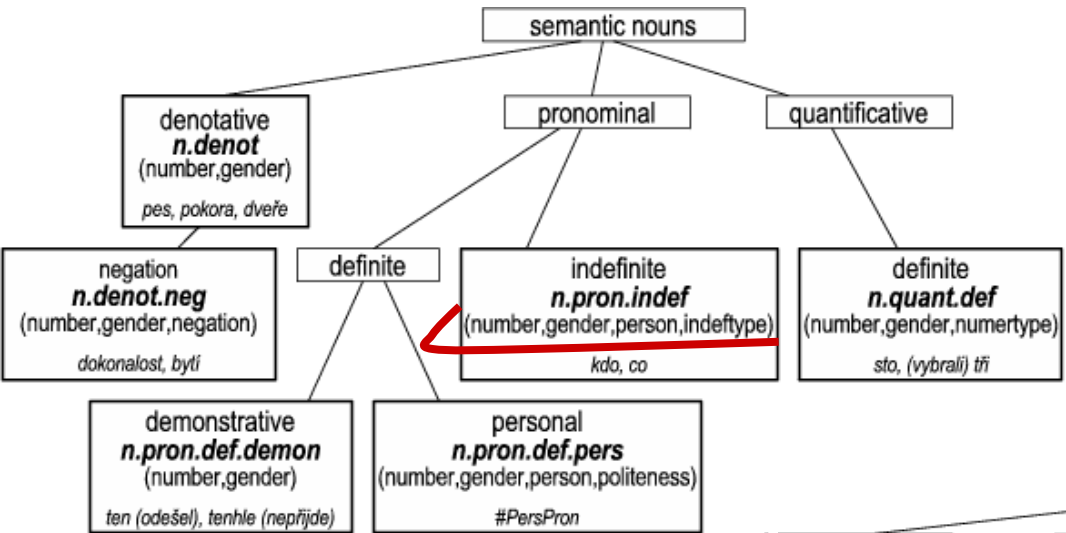


- lexical derivation:
pronouns, pronominal numerals and pronominal adverbs
(indefinite, interrogative, negative and totalizing) ...
derived from the correspond. interrogative or relative pronoun /
numeral / adverb
- t-lemma + indeftype \Rightarrow m-lemma
- values
 - **relat, indef1 ... indef6, inter, negat, total1, total2**

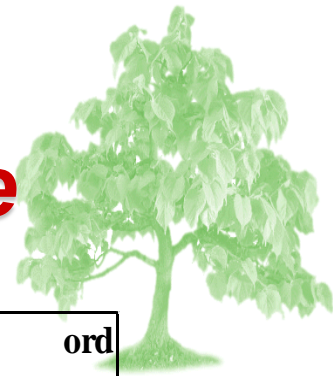
Grammateme *indef*type



t-lema:	<i>kdo</i>	<i>co</i>	<i>který</i>	<i>jaký</i>
hodnota gramatému indef type:				
relat	<i>kdo</i>	<i>co</i>	<i>který, jenž</i>	<i>jaký</i>
indef1	<i>někdo</i>	<i>něco</i>	<i>některý</i>	<i>nějaký</i>
indef2	<i>kdoši, kdosi</i>	<i>coši, co</i>	<i>kterýsi</i>	<i>jakýsi</i>
indef3	<i>kdokoli(v)</i>	<i>cokoli(v)...</i>	<i>kterýkoli(v)</i>	<i>jakýkoli(v)</i>
indef4	<i>ledakdo,</i> <i>leckdo...</i>	<i>ledaco,</i> <i>lecco...</i>	<i>leckterý,</i> <i>ledakterý</i>	<i>lecjaký,</i> <i>ledajaký</i>
indef5	<i>kdekdo</i>	<i>kdeco</i>	<i>kdekterý</i>	<i>kdejaký</i>
indef6	<i>málokdo,</i> <i>kdovíkd...</i>	<i>máloco...</i>	<i>málokterý...</i>	<i>všelijaký...</i>
inter	<i>kdo,</i> <i>kdopak...</i>	<i>co, copak...</i>	<i>který,</i> <i>kterýpak</i>	<i>jaký, jakýpak</i>
negat	<i>nikdo</i>	<i>nic</i>	<i>žádný</i>	<i>nijaký</i>
total1	<i>všechen</i>	<i>všechen,</i> <i>všechno, vše</i>	–	–
total2	–	–	<i>každý</i>	–



Grammateme *numertype* and *indefitype*

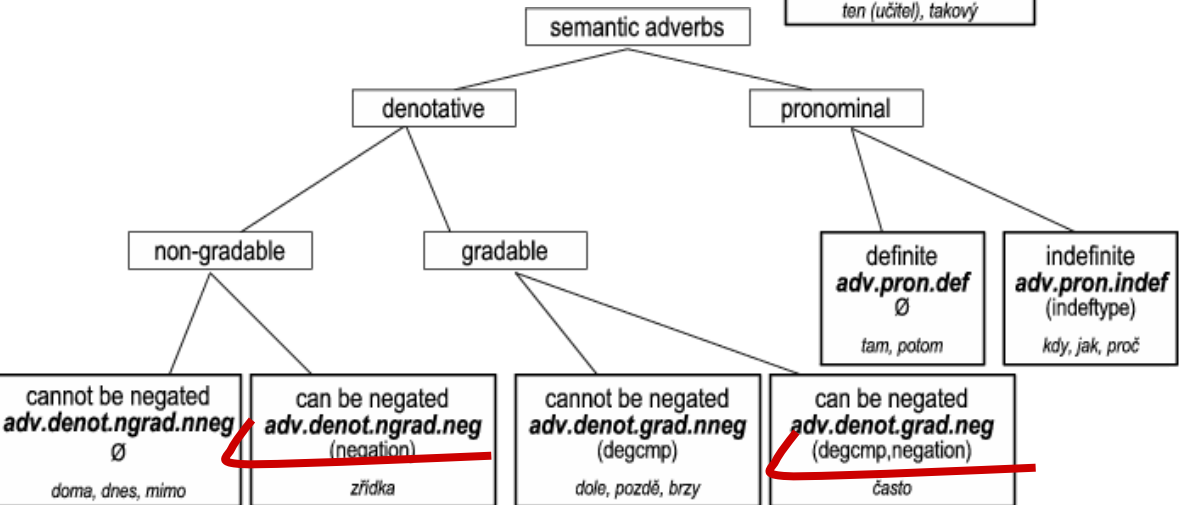
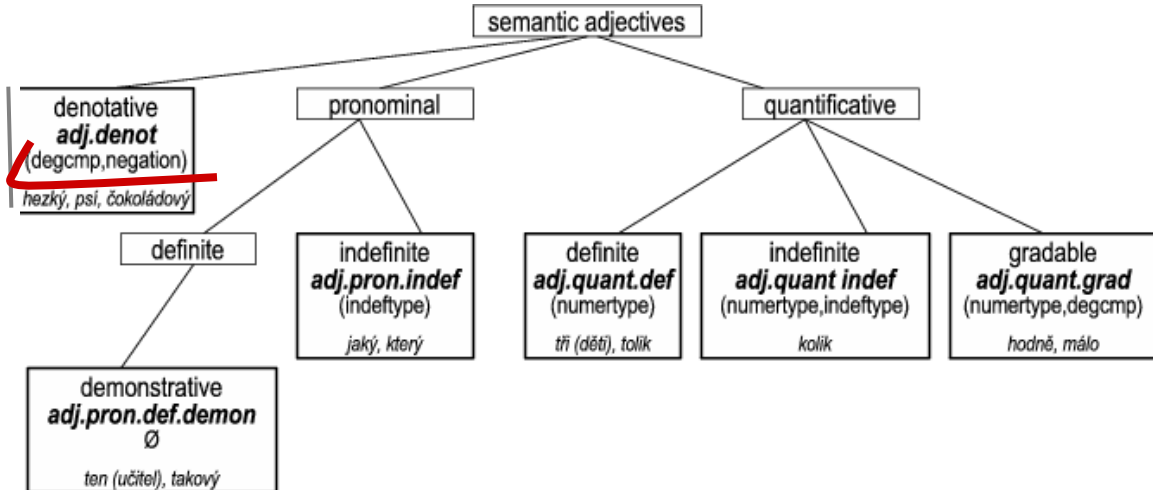
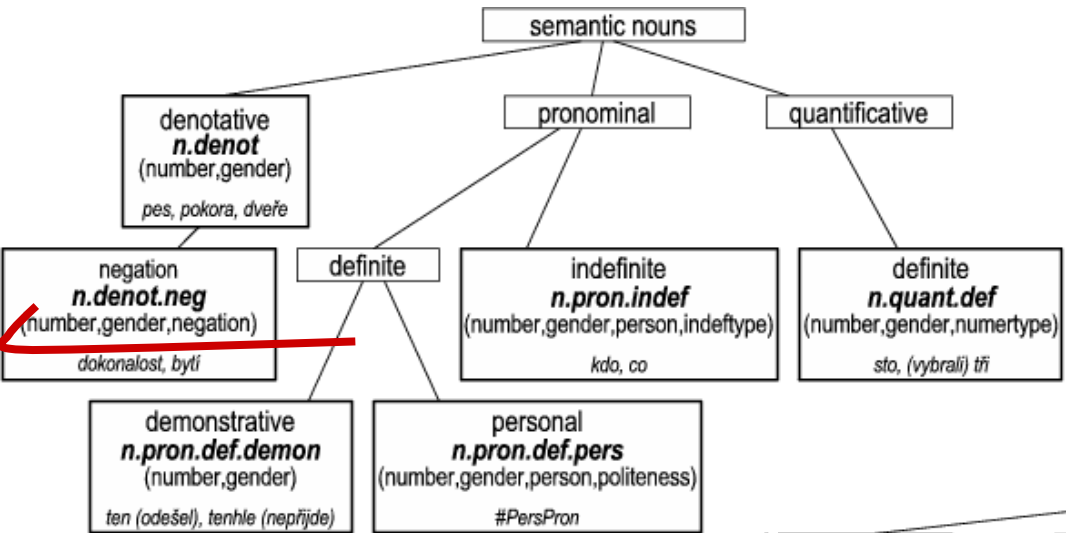


hodnota gramatému numertype:	basic	set	kind	ord
hodnota gramatému indefitype:				
relat	<i>kolik (klíčů), kolikery (dveře)</i>	<i>kolikery (klíče)</i>	<i>kolikerý</i>	<i>kolikátý</i>
indef1	<i>několik (klíčů), několikery (dveře)</i>	<i>několikery (klíče)</i>	<i>několikerý</i>	<i>několikátý</i>
indef2	–	–	–	–
indef3	–	–	–	–
indef4	–	–	–	–
indef5	–	–	–	–
indef6	<i>kdovíkolik (klíčů), kdovíkolikery (dveře)...</i>	<i>kdovíkolikery (klíče)...</i>	<i>kdovíkolikerý...</i>	<i>kdovíkolikátý...</i>
inter	<i>kolik (klíčů), kolikery (dveře)</i>	<i>kolikery (klíče)</i>	<i>kolikerý</i>	<i>kolikátý</i>
negat	–	–	–	–
total1	–	–	–	–
total2	–	–	–	–

Grammateme *negation*



- applicable for:
 - nouns with the endings *-ní, -tí, -ost*
 - all adjectives
 - some adverbs
 - (NOT for verbs ... node for negation, functor RHEM)
- (positive) t-lemma + negation \Rightarrow m-lemma
- values:
 - **neg1**: (negative)
nezralost (dítěte) [immaturity (of the child)], *nepěkný* [not-nice], *nedodržování (pořádku)* [non-maintenance (of order)], *nepříliš* [not-very], *nedaleko* [not-far], *nebytí* [not-being]
 - **neg0**: (affirmative)
zralost (dítěte) [maturity (of the child)], *pěkný* [nice], *dodržování (pořádku)* [maintenance (of order)], *příliš* [very], *daleko* [far], *bytí* [being]

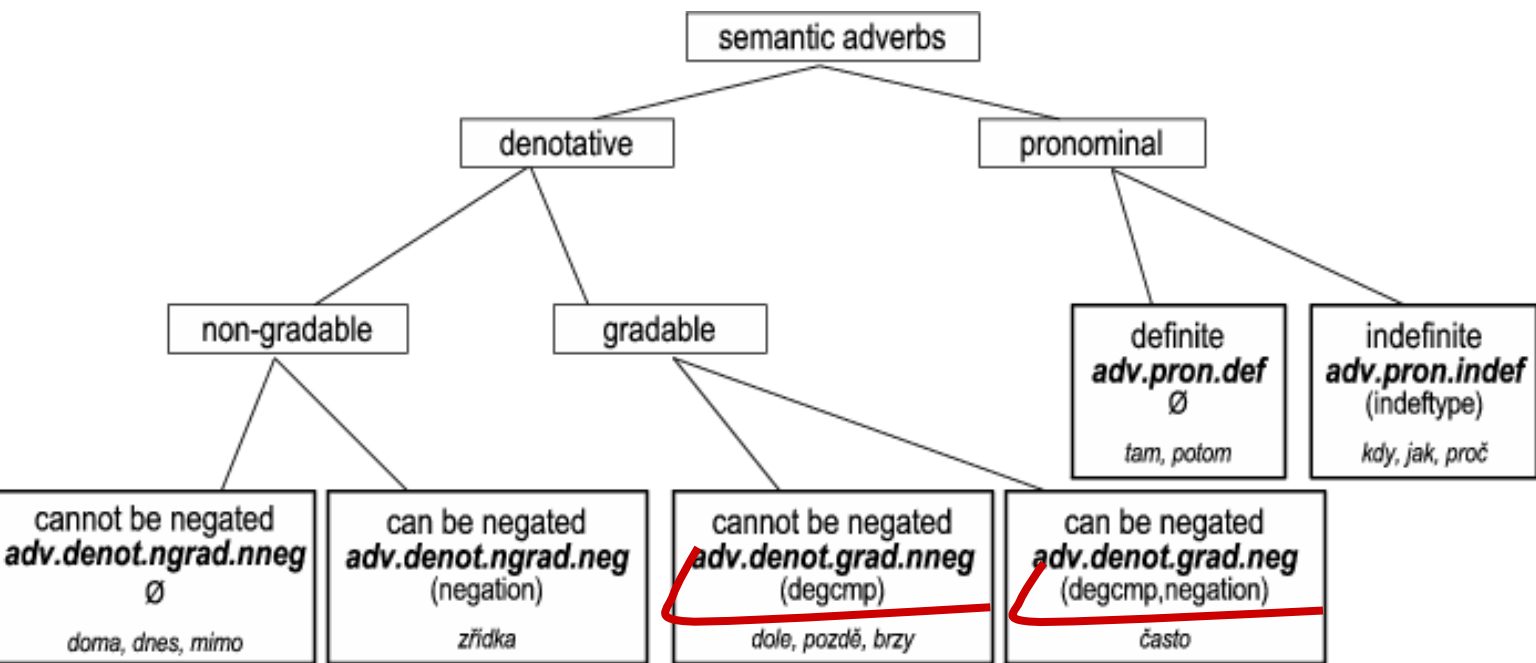
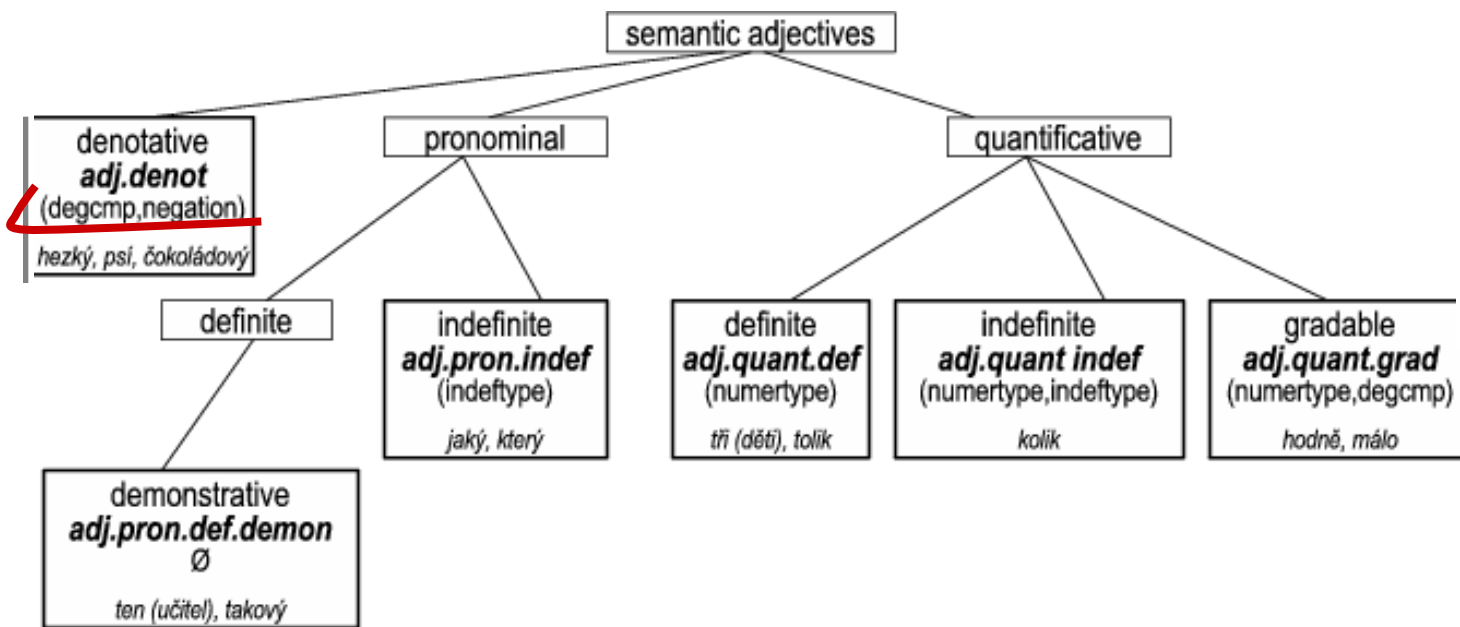


Grammateme *degcmp*



degree of comparison

- applicable for
 - denotative semantic adjectives
 - gradable denotative semantic adverbs ...*blízko* [near] vs. *dnes* [today]
- correlate of the morphological category of degree
- values
 - **pos**: *příjemná hudba* [nice music]
 - **comp**: *příjemnější hudba* [nicer music], *později* [later]
 - **sup**: *nejpříjemnější hudba* [the nicest music], *nejblíže* [the nearest]
 - **acomp**: (absolute comparative)
muž tmavší pleti [a man of darker skin], *starší žena* [an elder(ly) woman]



Grammateme *verbm* in PDT 2.0



- whether an event is presented by the speaker as **given** or **hypothetical**
correlate of the morphological category of verbal modality (cz slovesný způsob)
- applicable for verbal predicates

PDT 2.0

- **ind**: (indicative)

Přišli včas. [They came in time].

Kdy přišli? [When did they come?]

- **imp**: (imperative)

Přijďte tam včas! [Be there in time!]

- **cdn**: (conditional)

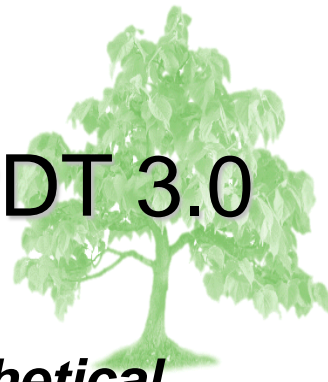
Přišli bychom určitě včas. kdyby ... [We would definitely come in time if ...]

- **nil**: (for infinitives, transgressives)

Každý má povinnost poskytnout člověku první pomoc.

[Everybody has the obligation to give first aid to the ones who need it]

Hlasitě nařikajíc, odcházela. [Loudly crying, she was leaving]



Grammateme *verbmod* → *factmod* in PDT 3.0

- whether an event is presented by the speaker
as *given* or *hypothetical*
correlate of the morphological category of verbal modality (cz slovesný způsob)
- applicable for verbal predicates

PDT 2.0 ... *vebmod*

- **ind:** (indicative)
- **imp:** (imperative)
- **cdn:** (conditional)
- **nil:** (for infinitives, transgressives)

PDT 3.0 ... *factmod*

- **asserted:** (given)
- **appeal:** (required, imperative)
- **potential:** (present conditional)
- **irreal:** (perfect conditional)
- **nil**

When a mistake occurs.asserted, it is.asserted possible to ask.nil the new owner that he would remit.potential money to the right owner of securities.

To draw the game would be.potential a success.

Take.appeal the phone and call.appeal (us).

Of course, the majority of Bangladesh Muslim inhabitants would not have noticed.irreal the interview in question under common circumstances at all.

The saint drunkard Joseph Roth would celebrate.potential his 100th birthday today.

Grammateme **deontmod** (modality)



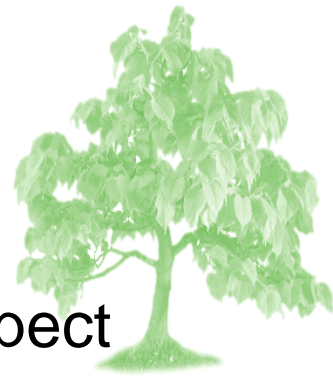
- an event is understood as necessary, possible, permitted etc
- applicable for all verbal forms
- values:
 - **deb:** necessity, i.e. *muset* [must, have to]
Musíme zaplatit fakturu včas. [We have to settle the invoice in time]
 - **vol:** volition, i.e. *chtít, hodlat* [to want, to intend]
Chtěl na sebe upozornit. [He wanted to turn the attention to himself]
 - **perm:** permission, i.e. *smět, moci* [may, to be allowed]
Nesmíš kouřit. [You are not allowed to smoke]
 - **hrt:** obligation, i.e. *mít* [should, to be obliged]
Petr ti měl ty podklady poslat. [Petr was supposed to send you the documents]
 - **poss:** possibility, i.e. *moci, dát se* [may, can, to be possible]
To se dá zjistit. [It is possible to find out]
 - **fac:** ability, i.e. *dovést, umět, moci* [can, to be able]
Umí se výborně přetvařovat. [He can/is able to pretend very well]
 - **decl:** without a modal verb (or if a modal verb has its own node)

Grammateme *tense*



- correlate of the morphological category of tense (cz. slovesný čas)
- time relation between two events (relative tense)
 - btw an event and a moment of speech (absolute)
- applicable for all finite non-imperative verbal forms and transgressives
- values:
 - **sim**: (simultaneous, the same time as another event / moment of utterance)
Píše dopis. Psal dopis. [He is writing a letter. He was writing a letter.]
 - **ant**: (prior to the time of another event / moment of utterance)
Nasal dopis. [He wrote a letter]
 - **post**: (after the time of another event / moment of utterance)
Napíše dopis. [He will be writing a letter]
 - **nil**: (imperative, infinitive)

Grammateme *aspect*



- correlate of the morphological category of verbal aspect (cz slovesný vid)
- applicable for all verbal forms
- values:
 - **proc**: (progressive, imperfective aspect)
Nejraději kupuje / nakupuje nábytek. [He likes to buy furniture best]
 - **cpl**: (complex, perfective aspect)
Koupil / nakoupil už vše potřebné. [He already bought everything he needed]
- biaspectual verbs
 - proc**: *Operace byla blokována až do konce 80. let.*
[The operation was blocked until the end of the 80's]
 - cpl**: *K 31. lednu 1995 registroval úřad 75 tisíc nezaměstnaných.*
[By January 31st 1995, the agency registered 75 thousands of unemployed people]

Grammateme *iterativeness*



- applicable for all verbal forms
- values:
 - **it1**: (multiple/iterated/repeated action)
only verbs with suffixes *-ívát/-ávat, -ívávat/-ávávat*
kupovávat → t-lemma *kupovat* + it1
 - **it0**:
incl. lexically expressed repetition
Každé pondělí chodí nakupovat. [He used to go shopping each Monday]

Grammateme *diagram* ... PDT 3.0



- **diathesis** ~ a way how a sentence is structured
i.e., “from perspective of which complementation of the predicate”
John ate the cake. vs. *The cake was eaten.*
- applicable for verbal predicates (not imperative)
- values:
 - **act** I bought a book. I prepared a dinner for my mum.
 - **pass** The book was bought. The dinner was prepared (by me) in advance.
 - **res1** *Obchod je otevřen.* (past participle) [The shop is open.]
 - **res2** *Obchod má otevřeno.* (past participle) [The shop is open.]
Babička má oběd uvařen.
Babička má uvařeno.
 - **recip** *Děti dostali vynadáno od rodičů.*
 - **disp** *Kniha se (mi) dobře čte.*
Spí se mu tam dobře. Tančilo se skvěle.
 - **deagent** *Čeká se tuhá zima.*
Knihy se kupují v knihkupectví.

Grammateme *dispmod* ... PDT 2.0



- dispositional modality (spec. construction in Czech)
- applicable for verbal predicates (not imperative)
- the agent's attitude towards the event is expressed

Tato studie se studentům četla dobře.

[It was easy for the students to read the article]

Spalo se nám tu výborně.

[We slept very well here]

- agent in dative (may be omitted) + refl. form of verb + manner +
+ (compl. in accusative → compl. in nominative)
- values
 - **disp1**
 - **disp0**
 - **nil** (imperative, infinitive, transgressive)

Grammateme *resultative* ... PDT 2.0



- applicable for all verbal forms
- resultative diathesis
- *být / mít* + passive participle
- values:
 - **res1**: (resulting state)
Oběd je uvařen. Je uvařeno. [The lunch is prepared.]
Má uvařen oběd. Má uvařeno.
 - **res0**:
Uvařil a uklidil. [He cooked (the dinner) and cleaned (the house)]

References

- Manual for Tectogrammatical Annotation
<http://ufal.mff.cuni.cz/pdt3.0/documentation>

