TOROT: The Tromsø Old Russian and OCS Treebank

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Birds and Beasts and the TOROT

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- TOROT: Tromsø Old Russian and OCS Treebank at nestor.uit.no
- No treebank is perfect, but ours should now be ready to use

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- Focus on making the most of a limited dataset by in-depth manual annotation on many levels

A family of treebanks for ancient languages

- Classical Latin and Ancient Greek: expansions of the PROIEL corpus
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- Advantages to TOROT: established annotation practice for early Slavic; lemma/form base

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- Advantages to text contributors: Indexing of your choice for easy transfer of annotation

Text collaborations

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- Middle Russian texts from the Institut russkogo jazyka

TOROT digitisations

- Project members have (reluctantly) digitised several manuscripts that were unavailable or unavailable in sufficient detail
- *Russkaja pravda, Life of Avvakum, Life of Feodosij Pečerskij*, some letters and legal acts
- Principle: always stick to a single good manuscript
- Retain original orthography as far as possible
- Consult manuscript facsimile when possible
- Base tokenisation on existing editions
- Release digitised text freely

Goals and results

text	morph	syntax	reviewed	goal
OCS	207 893	157 726	121 577	150 000
Old Russian	–	74 156	69 489	100 000
Middle Russian	–	48 097	47 403	50 000

Text inventory

text	morph	syntax	reviewed
Codex Marianus	–	57577	57554
Codex Suprasliensis	–	98077	63042
Codex Zographensis	52181	2072	981
Codex Laurentianus	–	55368	55013
Mstislav's letter	–	159	0
Russkaja pravda	–	4021	3928
Statute of Prince Vladimir	–	650	0
Uspenskij sbornik	–	13818	10548
Varlaam's donation charter	–	140	0
Domostroj	–	22662	22640
The Life of Avvakum	–	22210	22205
The Tale of Luka Koločskij	–	897	281
The taking of Pskov	–	2328	2277

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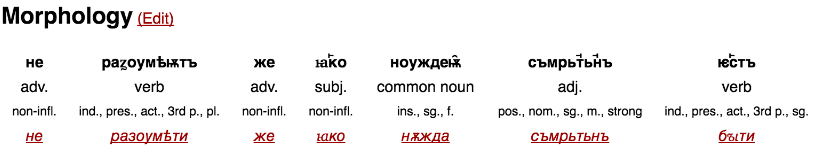
- Auto-tag other PVL manuscripts and align?

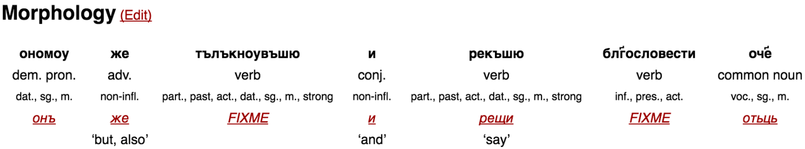
Auto-tagged Suprasliensis



Morphology (Edit)

не	раꙁоумѣѭтъ	же	ꙗ҄ко	ноуждеѭ̑	съмрь҄ть҄нъ	ѥ҄стъ
adv.	verb	adv.	subj.	common noun	adj.	verb
non-infl.	ind., pres., act., 3rd p., pl.	non-infl.	non-infl.	ins., sg., f.	pos., nom., sg., m., strong	ind., pres., act., 3rd p., sg.
не	разоумѣти	же	ıако	нѫжда	съмрьтьнъ	бꙑти

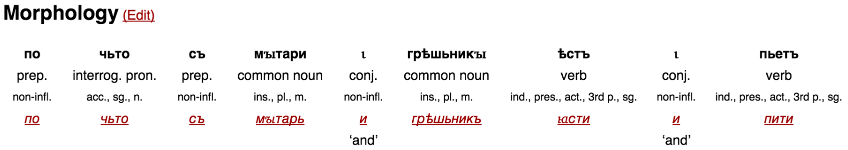
Auto-tagged Feodosij Pečerskij



Morphology (Edit)

ономоу	же	тълъкноувъшю	и	рекъшю	блг҃ословести	оч҃е
dem. pron.	adv.	verb	conj.	verb	verb	common noun
dat., sg., m.	non-infl.	part., past, act., dat., sg., m., strong	non-infl.	part., past, act., dat., sg., m., strong	inf., pres., act.	voc., sg., m.
онъ	же	*FIXME*	и	рещи	*FIXME*	отьць
	‘but, also’		‘and’	‘say’		

Auto-tagged Zographensis with some corrections



Morphology (Edit)

по	чьто	съ	мꙑтари	ι	грѣшьникꙑ	ѣстъ	ι	пьетъ
prep.	interrog. pron.	prep.	common noun	conj.	common noun	verb	conj.	verb
non-infl.	acc., sg., n.	non-infl.	ins., pl., m.	non-infl.	ins., pl., m.	ind., pres., act., 3rd p., sg.	non-infl.	ind., pres., act., 3rd p., sg.
по	чьто	съ	мꙑтарь	и ‘and’	грѣшьникъ	ꙗсти	и ‘and’	пити

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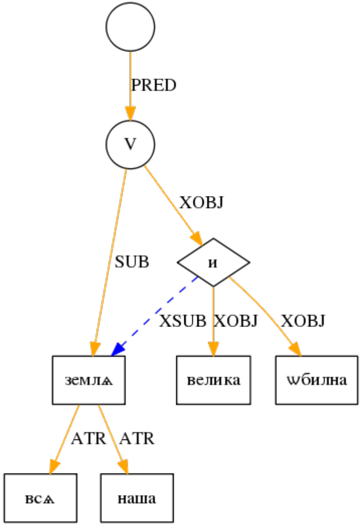
- Future: Experiment with syntactic parsing and pre-tagging?

Syntactic analysis



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- OCS: nouns are annotated for animacy, verbs are annotated for prefixation, suffixation and stem

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- For demonstrations of the query options: demo session!

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- The syntactic analysis enhances the morphological analysis; it is an advantage to make the syntactic interpretation explicit
- Several phenomena may be given elegant analyses by exploiting the interplay between the syntactic and morphological layers
- Animacy: the genitive-accusative is always taken as genitive in the morphology, its status is determined by the syntax (OBJ? OBL? negated?)

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- How far can statistics take us?
- Every study improves the corpus: targeted corrections

The status of OCS *byti*

- Eckhoff, Janda and Nesset 2014: Grammatical profiling and constructional profiling to assess whether *byti* was one or two verbs
- Data layers: morphology, syntax, token alignments (Greek used as rough semantic tags)
- Radial category structure of the verb's semantics emerged from argument structure data
- *Byti* should most reasonably be seen as a single polysemous verb

Inflectional and derivational aspect in OCS

- Eckhoff and Haug to appear (soon!)
- Data layers: Morphology, syntax, prefix/stem/suffix tags, token alignments
- Conclusions:
  - Verb pairs and imperfect/aorist both express viewpoint aspect
  - The aorist is independent of telicity and has retained meanings that the new perfective doesn't have
  - These meanings can only be seen with atelic simplex verbs (delimitative, ingressive)
  - Evidence that aspect mismatches were a later development: imperfective aorist and perfective imperfect were not found in Marianus/Zographensis

Animacy and definiteness in OCS

- Eckhoff to appear (soon!)
- Data layers: Morphology, syntax, semantic tags (animacy), information status, anaphoric links, token alignments
- The gen-acc predominates with old and accessible objects
- Variation between gen-acc and nom-acc with new and anchored objects
- The nom-acc marks referential persistence
- The gen-acc may be preferred if the subject has low discourse prominence

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- Adding information: secondary dependencies (Berdičevskis and Eckhoff to appear (soon!))

Using the SynTagRus data

- Do perfective and imperfective verbs have different constructional profiles? Do they have different distributions across argument frames?
- It appears that they do
- We can track the development of simplex verbs: from aspectually neutral to imperfective

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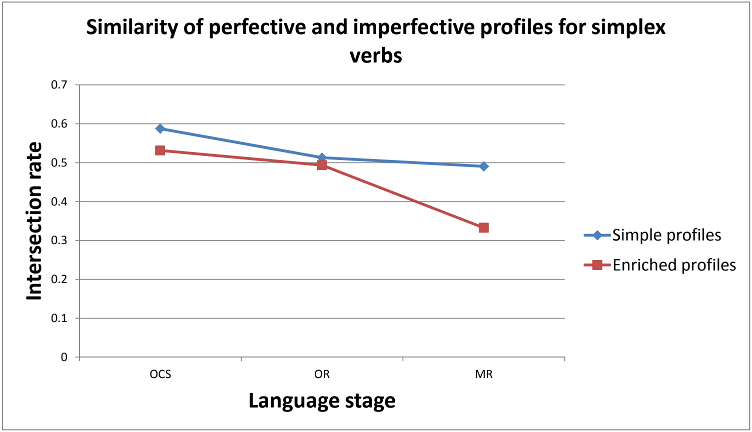
- **Hypothesis:** for simplex verbs, the aspectual opposition is most relevant in Modern Russian, less so in Old Russian, even less in Old Church Slavonic
- **Prediction:** the intersection rate (measure of similarity) between the 'simplex perfective' and 'simplex imperfective' profiles will be highest for Old Church Slavonic and lowest for Modern Russian

The history of simplex verbs: results



Varangian Rus' Digital Environment: pedagogical applications

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- Expand the Old/Middle Russian part of TOROT with 100 000 more tokens

Lemmas with attested paradigms: *darъ*

	sg	du	pl
N	darъ	–	–
A	darъ	–	dary
G	daru	–	darovъ
D	daru	–	daromъ
I	daromъ, darom	–	dary
L	–	–	–
V	–	–	–

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- Comprehensive annotation improves overall quality of data

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- Coming: pedagogical tools and a dictionary resource