UD as an annotation standard for learner language

a case study on L2 Swedish

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LT2214 Computational Syntax

VT25

Learner data

English (FCE)

```
I also suggest that more plays and films should
<ns type="RV"> <ns type="FV"><i>be taken</i><c>take</c>
</ns> place</ns>.
```

Italian (VALICO)

```
Finse <MC><i>aveva paura</i><c>che aveva paura</c>
</MC> di un <DN><i>rapito</i><c>rapimento</c></DN>.
```

Swedish (SweLL)

```
<sentence> <w ref="1">"</w> <w ref="2" target_form="Det"
correction_label="L-Ref">Den</w> <w ref="3">är</w>
<w ref="4">en</w> <w ref="5">tredjedel</w>
<w ref="6">av</w> <w ref="7">din</w> <w ref="8">dag</w>
<w ref="9">!</w> </sentence>
```

The problems

- coarse-grained error labels
- exclusive focus on errors
- lots of manual annotation needed
- lack of interoperability between corpora

The solution: UD

- fine-grained morphosyntactic annotation
- parsers
- cross-linguistic consistency $\rightarrow$ possibility to compare:
  - L2 vs. standard
  - L1 vs. L2
  - different L2s

L1-L2 treebanks

L1-L2 Parallel Dependency Treebank as Learner Corpus

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- L2 sentences ‖ correction hypotheses
- no explicit error tagging

UD treebanks of learner language

language	name	size	status	parallel
Chinese	CFL	451	released	**yes****
English	ESL	5124	retired*	**yes**
English	ESLSpok	2320	released	no
Italian	Valico	398	released	**yes**
Korean	KSL	12977	released	no
Russian	?	500	WIP	**yes**
Swedish	SweLL	~5000	WIP	**yes**

*available for download but not part of the latest UD release
**only L2 half available

Challenges

expectations	**reality**
fine-grained annotation	when the validator allows that
parsers	don't work terribly well
cross-linguistic consistency	is limited to error-free spans

The `root` of the problem

The UD guidelines are designed with standard language in mind

- should we annotate the intended meaning (correction) and/or the observed language use?
- how to handle mismatches between the characteristics of individual tokens and their use in context?

Treebanking SweLL

Source corpus

SweLL-gold, aka the Swedish Learner Language corpus:

- **genre**: essays (misc topics)
- **learners**: adult L2 Swedish learners with various language backgrounds and proficiency levels
- **annotation**: error tagging, pseudonymization and normalization (minimal edits)
- **license**: CLARIN-ID -PRIV -NORED -BY

Example 0

Självklart	**att**	**det**	**är**	viktigt	.
of.course	*that*	*it*	*is*	*important*	*.*

- correction: “Självklart **är det** viktigt.”
- translation: “Of course it is important.”

Example 0

ADV	SCONJ	PRON	AUX	ADJ	PUNCT
Självklart	**att**	**det**	**är**	viktigt	.
of.course	*that*	*it*	*is*	*important*	*.*

- correction: “Självklart **är det** viktigt.”
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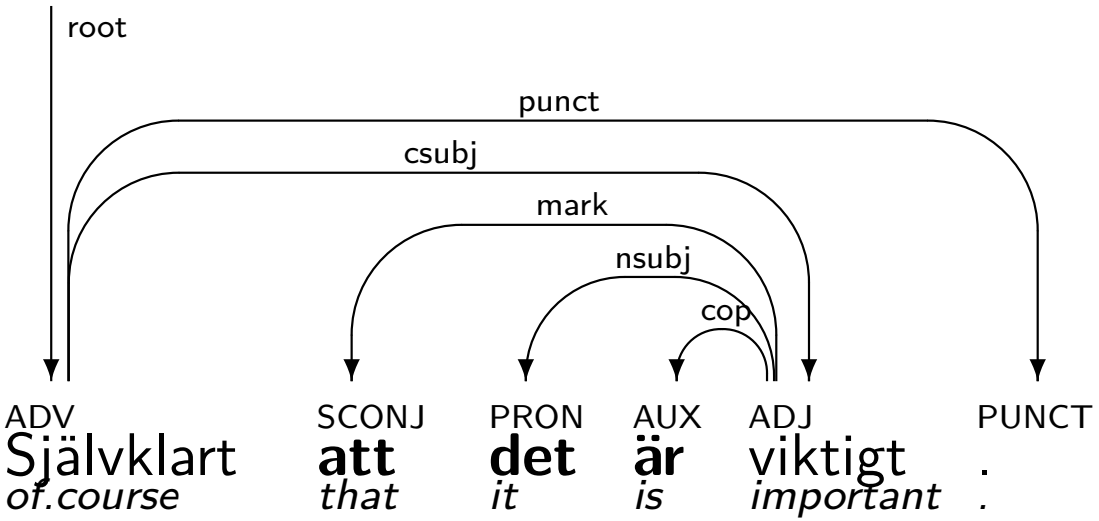
Example 0



- correction: “Självklart **är det** viktigt.”
- translation: “Of course it is important.”

Example 1

Jag	hade	**emotskänslor**	fast	jag	**var**	**vänta**	det
I	*had*	*againstfeelings*	*although*	*I*	*was*	*wait*	*that*

- correction: “Jag hade **motstridiga känslor** fast jag **hade väntat mig** det”
- translation: “I had mixed feelings although I was expecting that”

Example 1

PRON	VERB	NOUN	SCONJ	PRON	AUX	VERB	PRON
Jag	hade	**emotskänslor**	fast	jag	**var**	**vänta**	det
I	*had*	*againstfeelings*	*although*	*I*	*was*	*wait*	*that*

- correction: “Jag hade **motstridiga känslor** fast jag **hade väntat mig** det”
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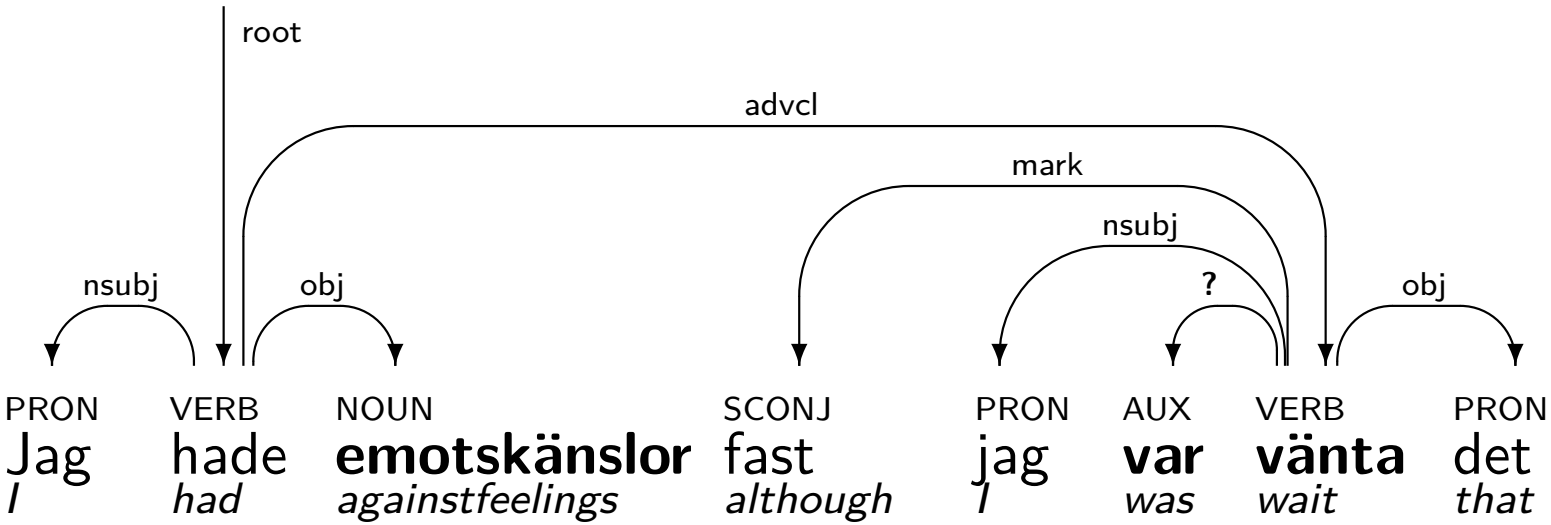

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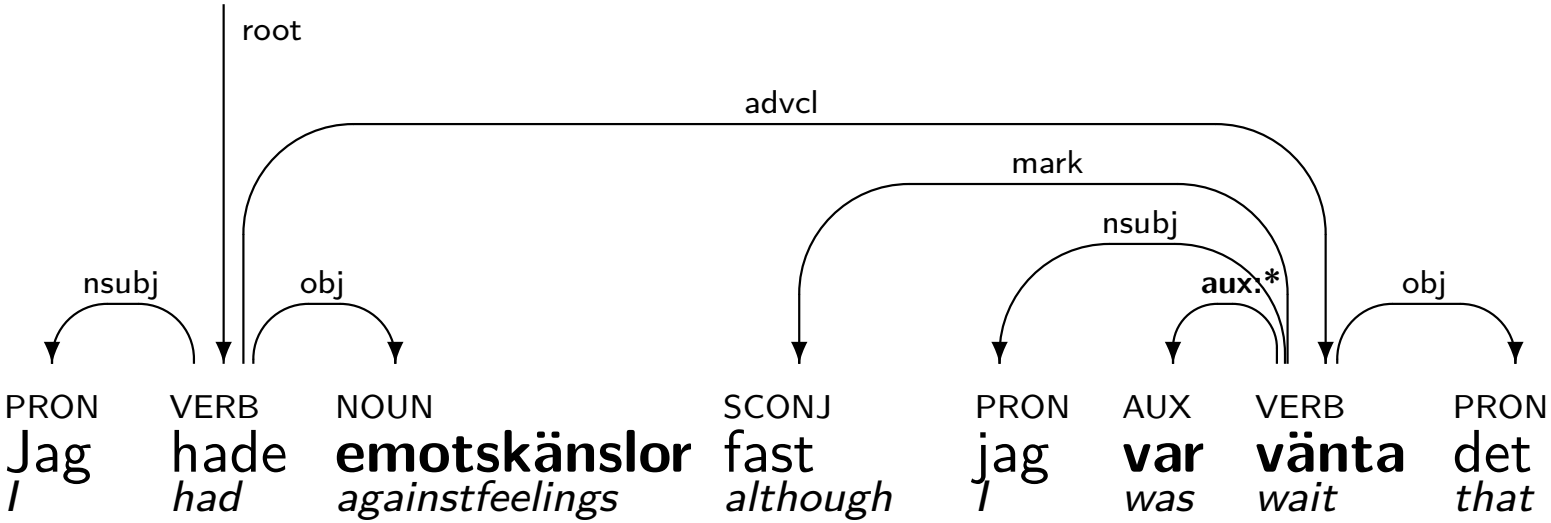
Example 1



- correction: "Jag hade **motstridiga känslor** fast jag **hade väntat mig** det"
- translation: "I had mixed feelings although I was expecting that"

Example 2

en	lång	**bus**	**resa**
a	*long*	*bus*	*trip*

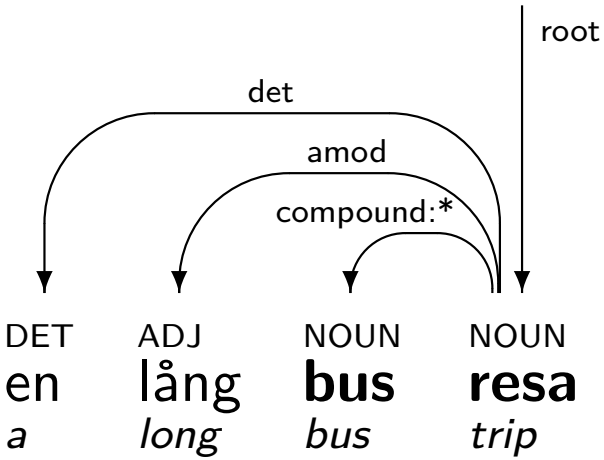
- correction: “en lång **bussresa**”
- translation: “a long bus trip”

Example 2

DET	ADJ	NOUN	NOUN
en	lång	**bus**	**resa**
a	*long*	*bus*	*trip*

- correction: “en lång **bussresa**”
- translation: “a long bus trip”

Example 2



- correction: “en lång **bussresa**”
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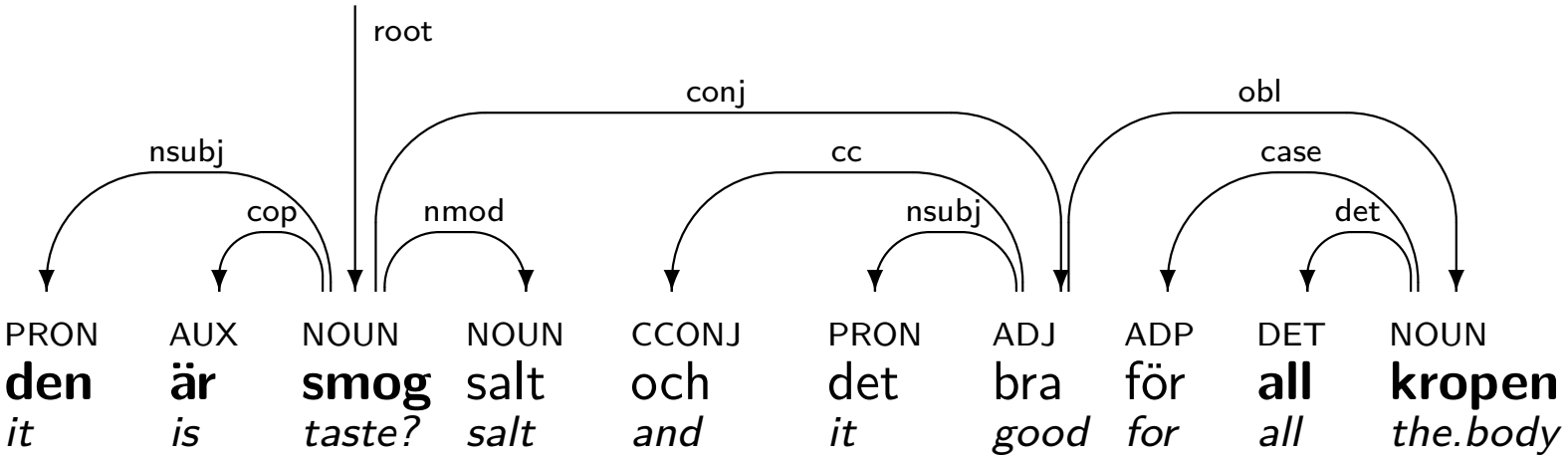
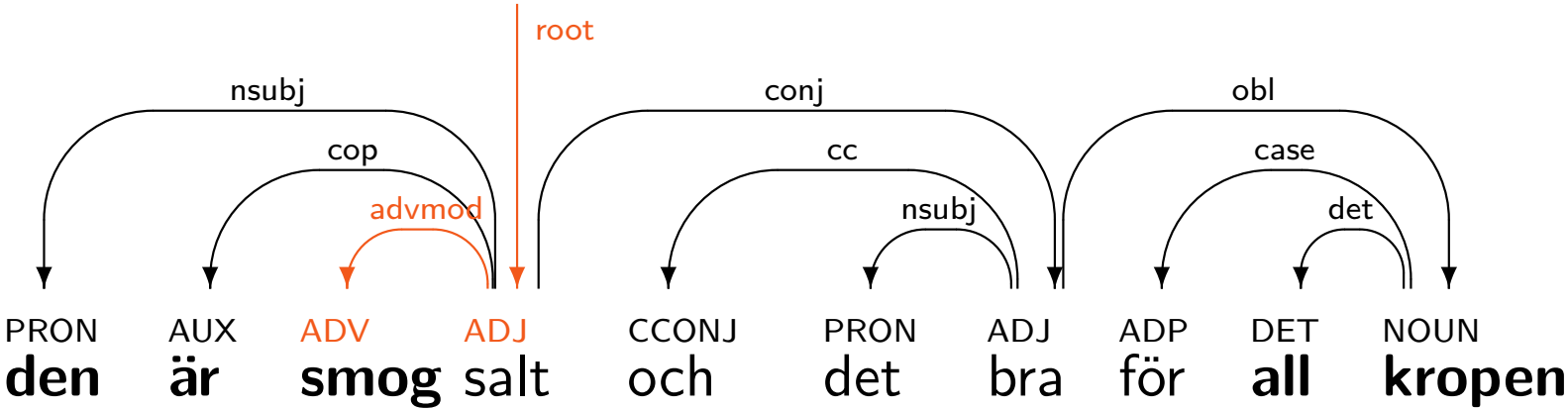
Example 3



- correction: "**Det smakar** salt och det **är** bra för **hela kroppen**"
- translation: "it tastes salt and it's good for the whole body"

Example 3: parser output



(obtained with the UDPipe 2 Talbanken 2.15 model)

Our principles

- the validator is a tool, not a goal:
  - ***literal* criteria at the token level**
  - ***distributional* criteria at the syntax level**
  - **borrow from L1** guidelines when necessary
- **correction-aware annotation**: the annotation of learner sentences should be consistent with the semantics of the correction hypothesis

Status

- guidelines and test set (200/500 sentences) WIP
- remaining 5000 + 500 sentences TODO

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- guidelines and test set (200/500 sentences) WIP
- remaining 5000 + 500 sentences TODO
  - you are welcome to **participate**!
    - you do *not* have to be a native speaker (in fact, none of the current annotators is)
    - you *might* be able to do this as a course project

Exploring parallel learner treebanks with STUnD

STUnD

- *Sökverktyg för Tvåspråkiga Universal Dependencies-trädbanker*, or
- Search Tool for (parallel) Universal Dependencies Treebanks
- available at `demo.spraakbanken.gu.se/stund` (hopefully)

Under the hood

1. identify subtree alignments
2. run the query on the LHS treebanks, looking for matching subtres
3. find the corresponding RHS subtree (and check if it matches the RHS-specific patters)

Use cases

- error retrieval: patterns (queries) $\rightarrow$ trees
- pattern extraction: trees $\rightarrow$ patterns
- feedback comment generation: patterns $\rightarrow$ natural language comments

Sources

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To appear

- Arianna Masciolini, Herbert Lange and Márton A Tóth. *Exploring parallel corpora with STUnD: a Search Tool for Universal Dependencies*. In the upcoming Huminfra Handbook, Gothenburg, Sweden, **most likely** 2025
- a paper about harmonization of UD guidelines for L2 treebanks