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Czechizator – Čechizátor

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Czechizator

- lexicon-less “translation” from English to Czech

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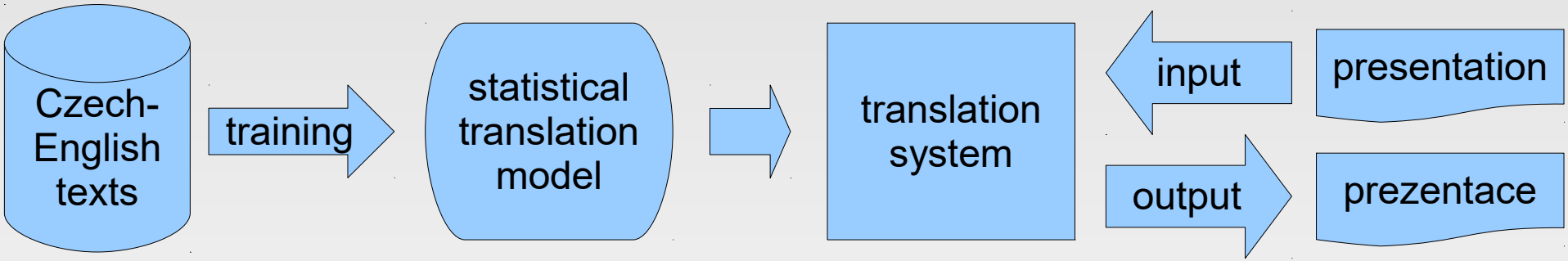

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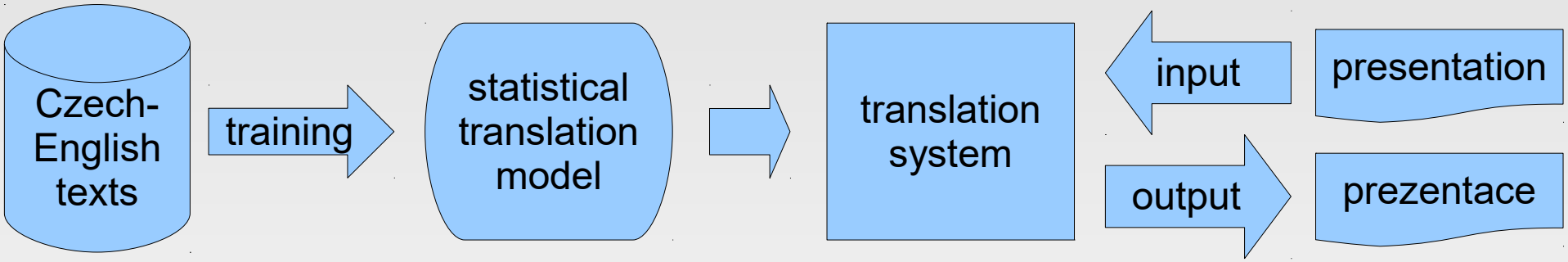
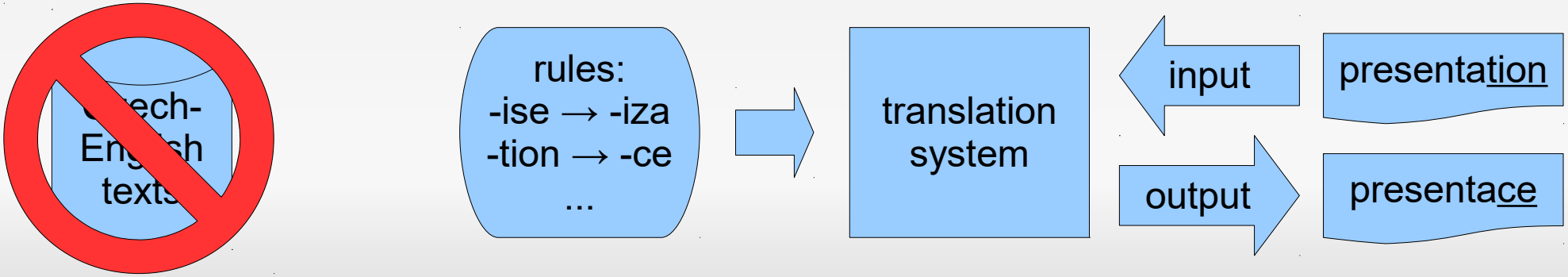


- Czechizator approach: use a set of rules instead



Example: Czechizating ITAT titles

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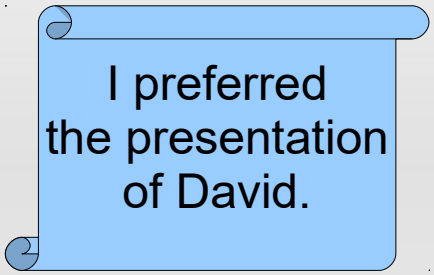
- Multivariable Approximation by Convolutional Kernel Networks
  Multivariabilní aproximace Konvolucional Kernel netvorksu

Implementation

- lexical translation: a set of Czechization rules
  - 43 ending-based transformation rules (see later)
  - 33 transliteration rules: th → t, ti → ci, ck → k, ph → f, sh → š, igh → aj, dg → dž, w → v, c → k…
  - 36 hard-coded translations of semi-auxiliaries: be, have, do, and, or, all, this, many, only, main…
- grammar and function words: TectoMT
  - English-Czech machine translation system
  - Czechizator implemented as a TectoMT lexical translation model

Implementation



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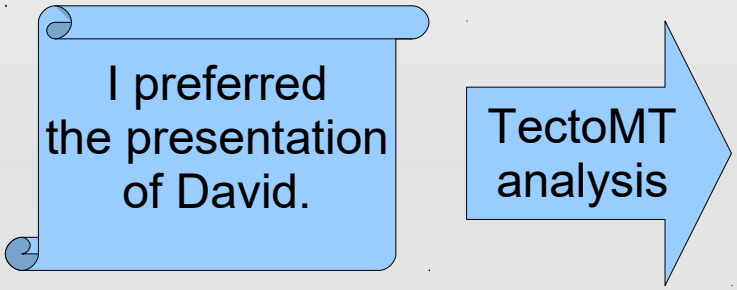

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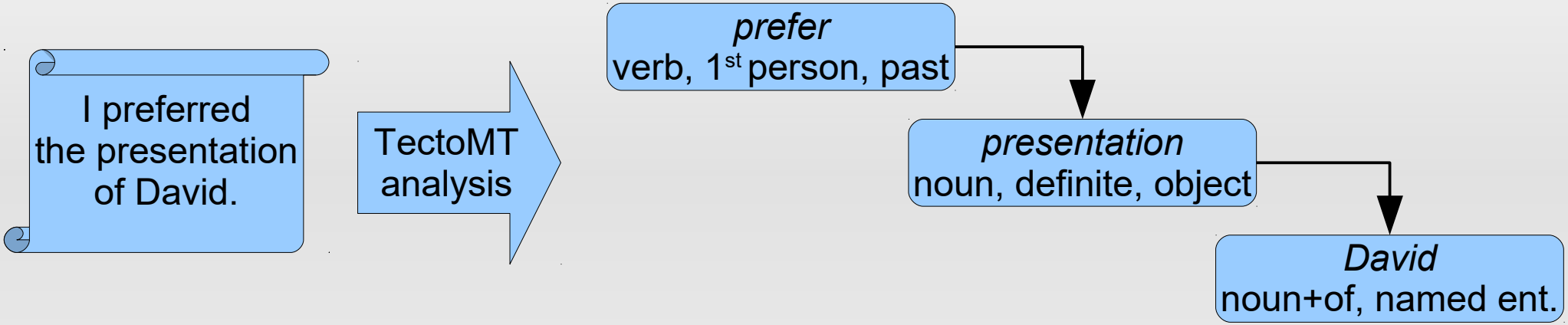

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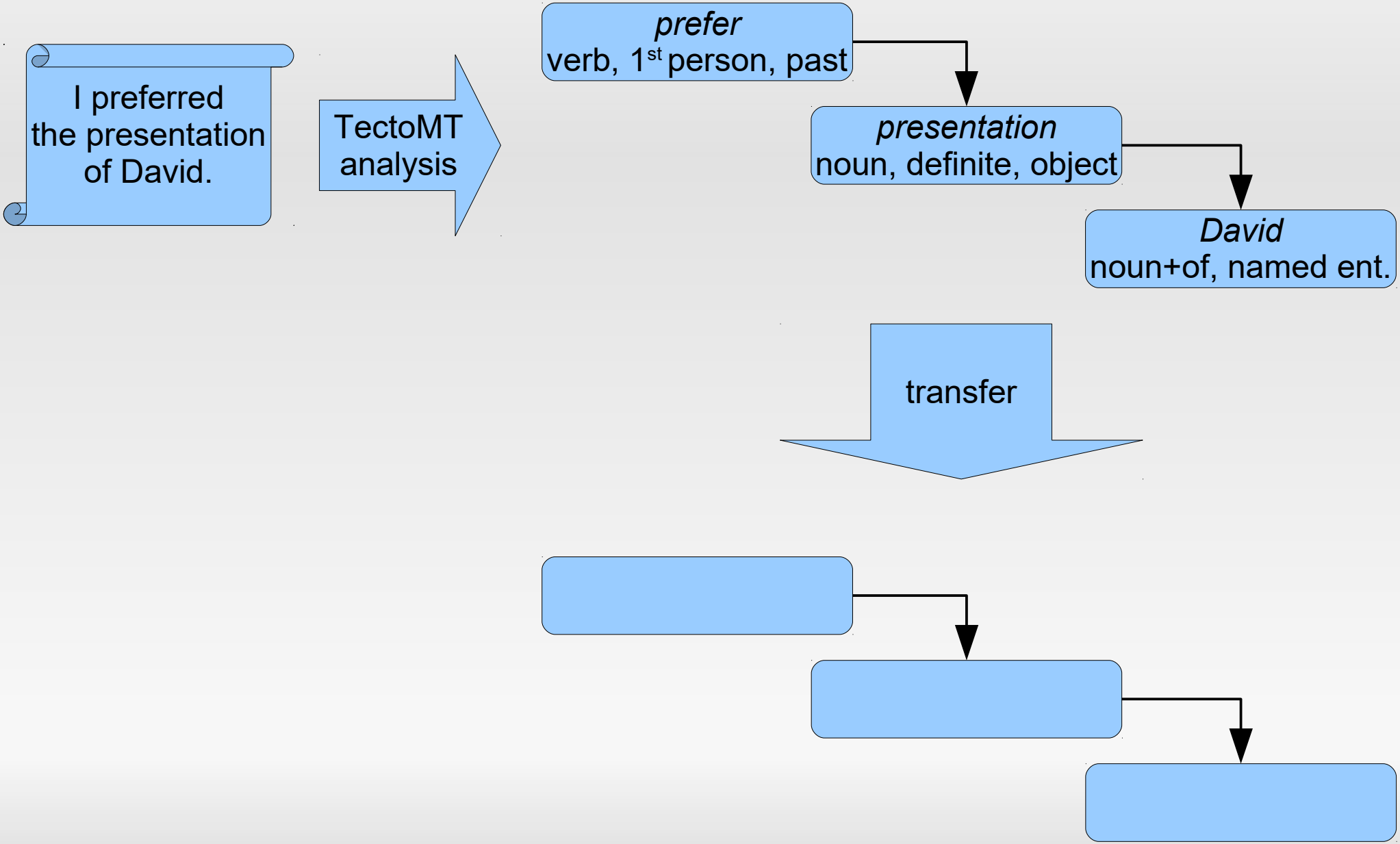

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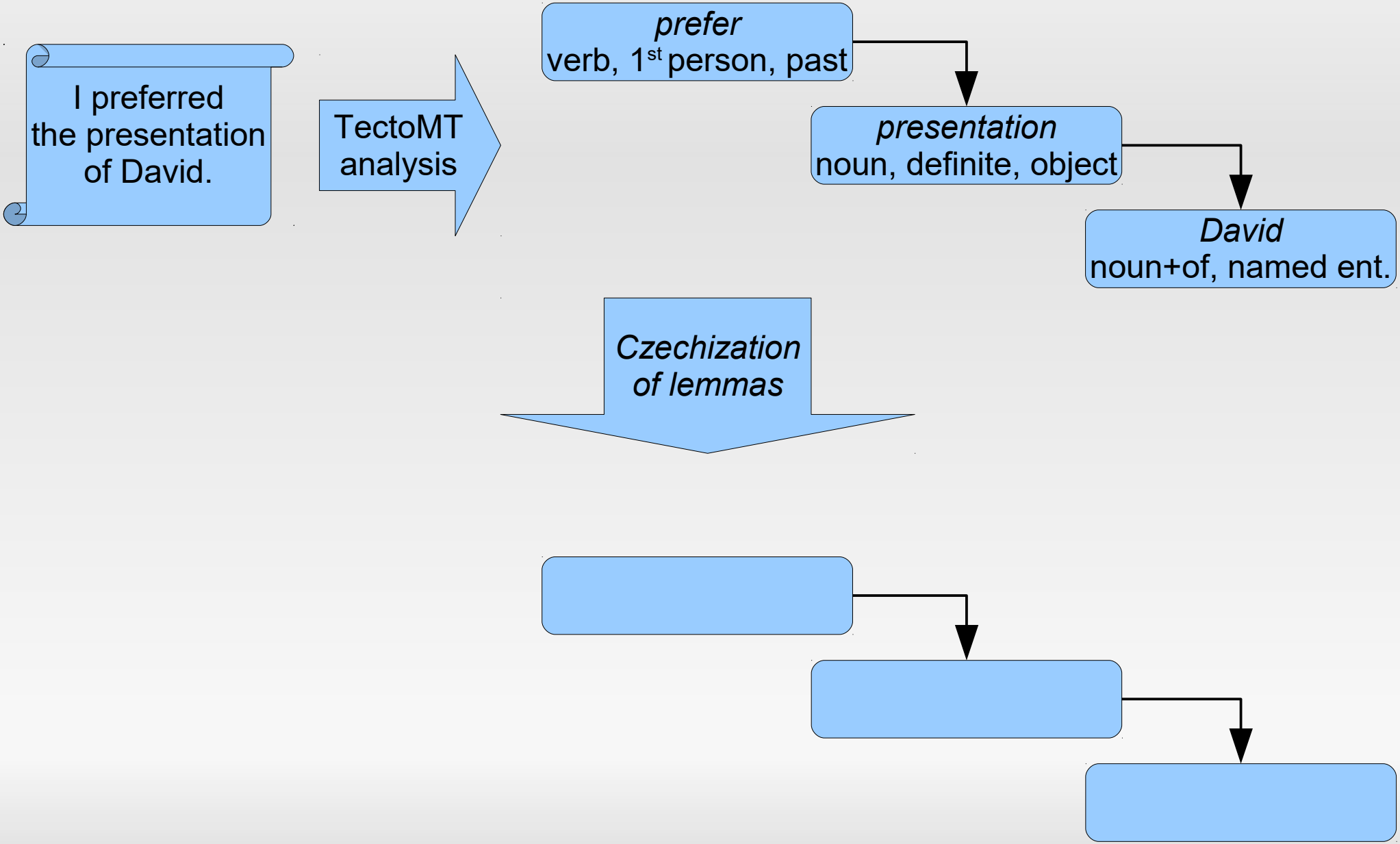

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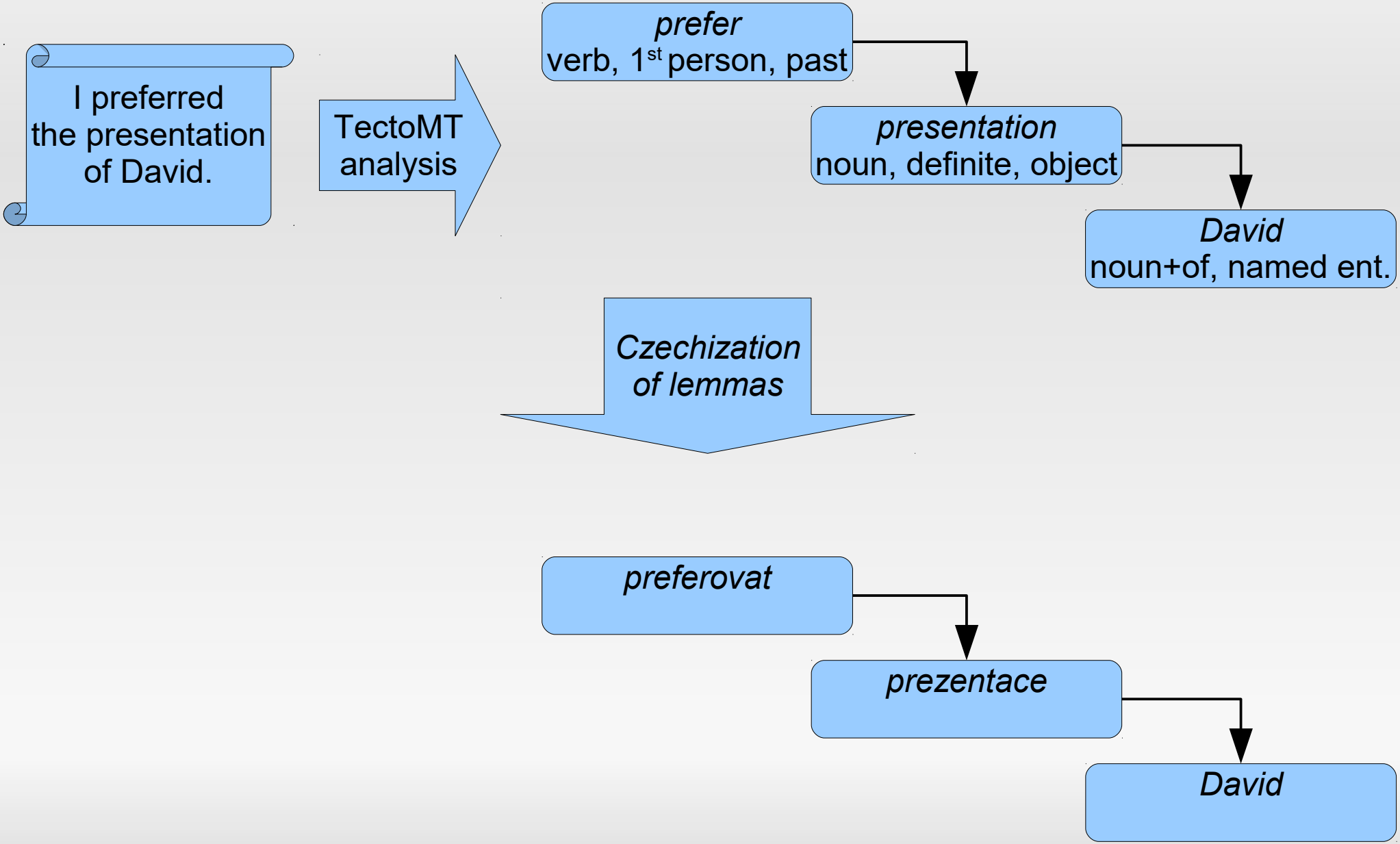

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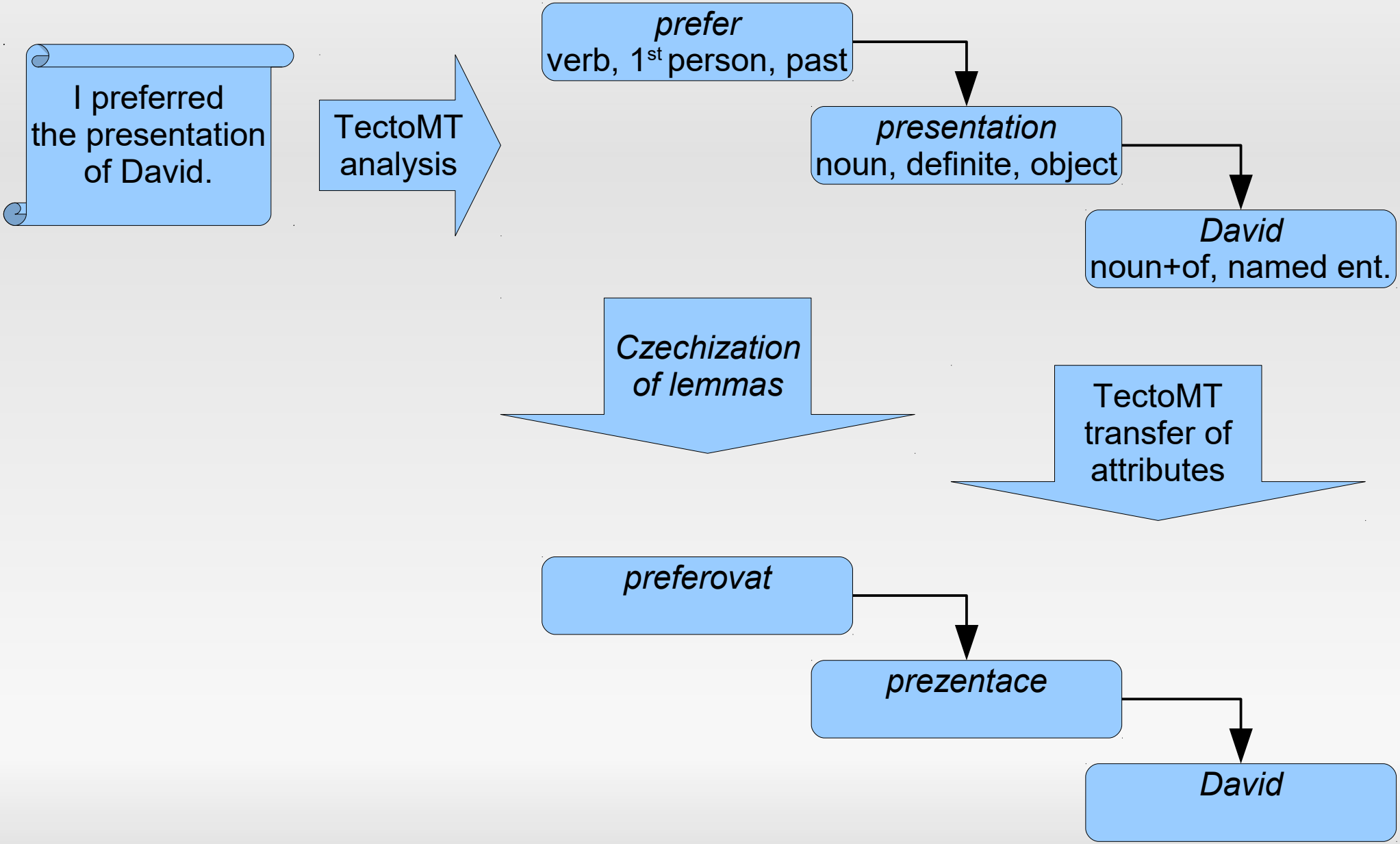

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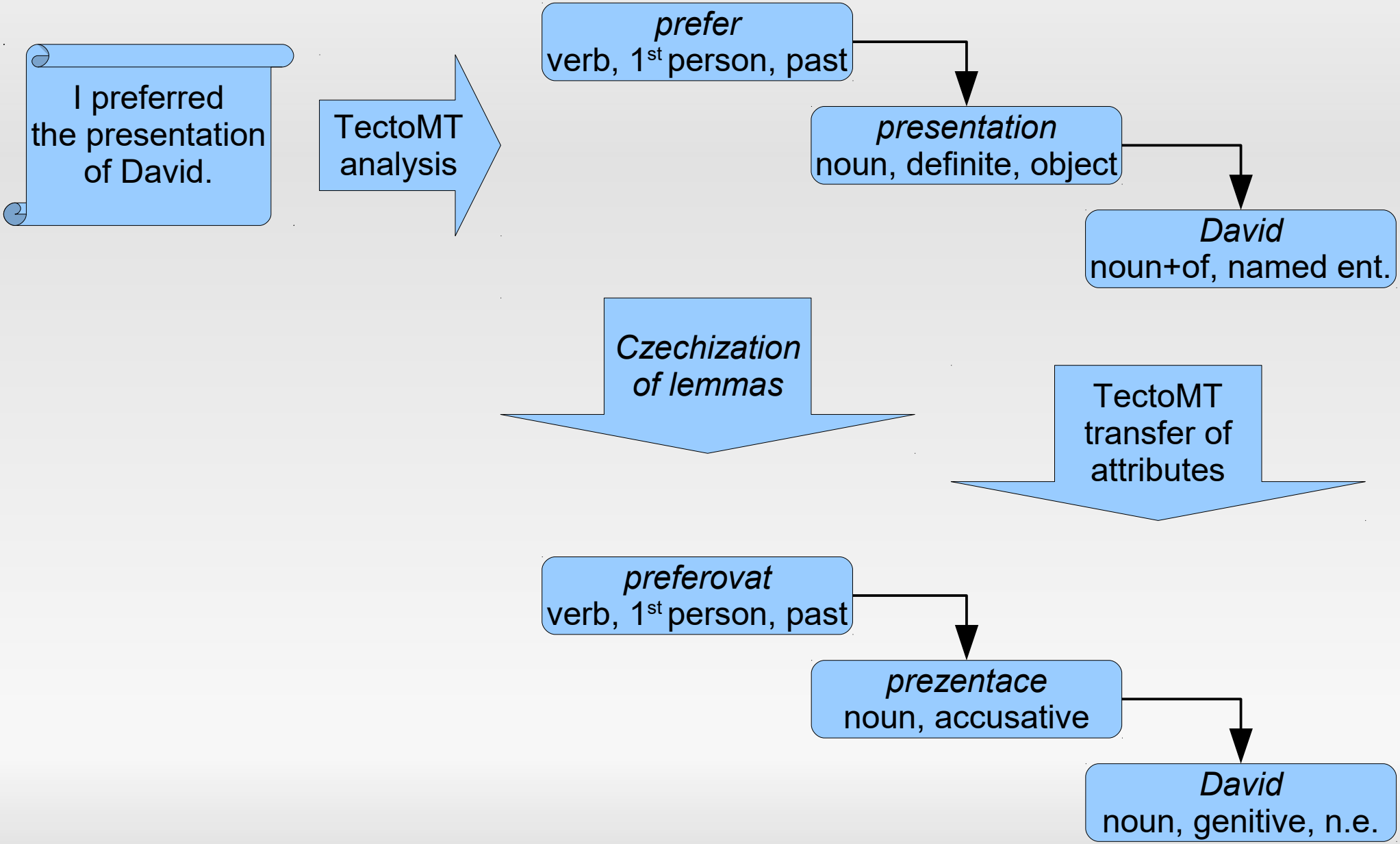

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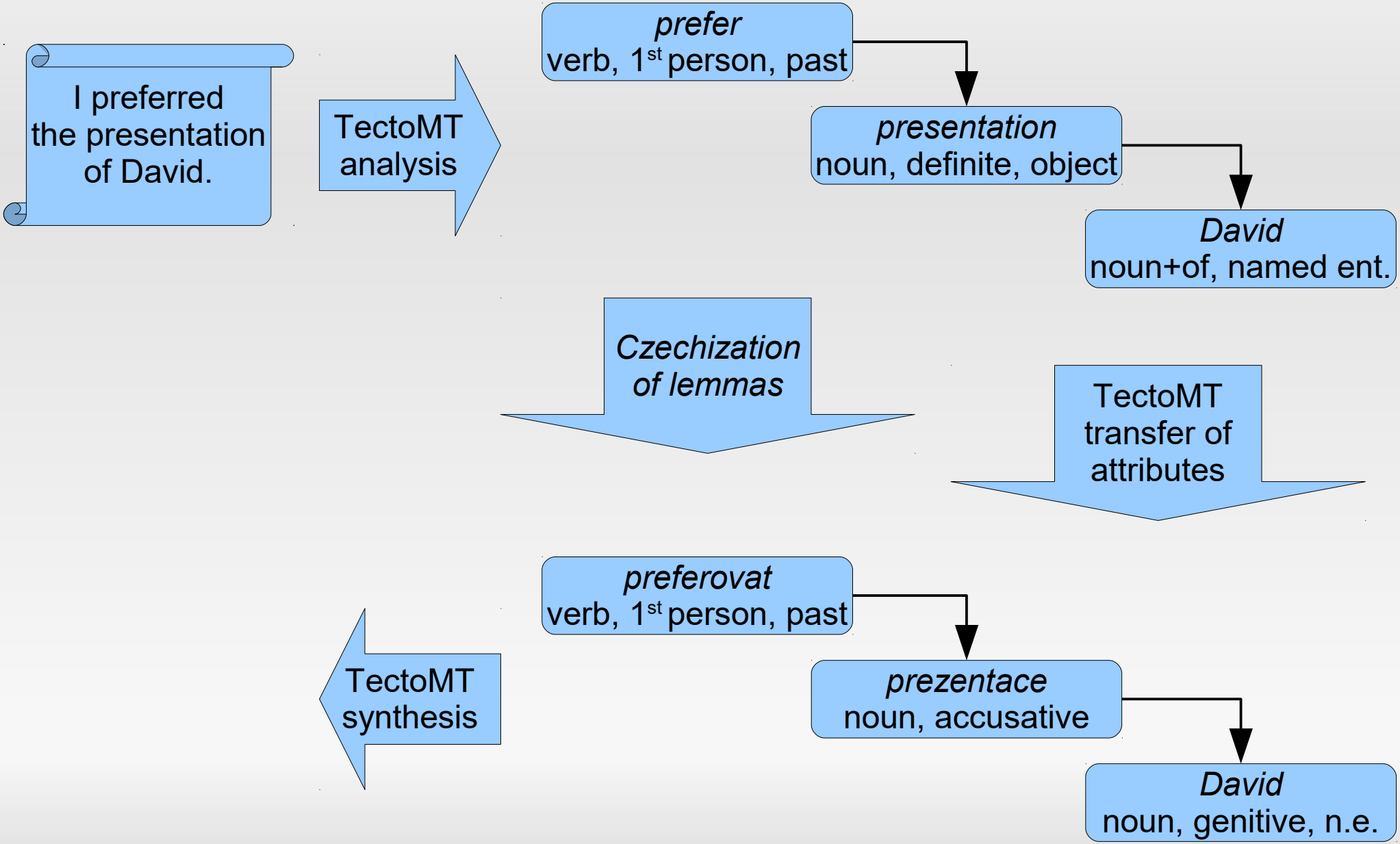

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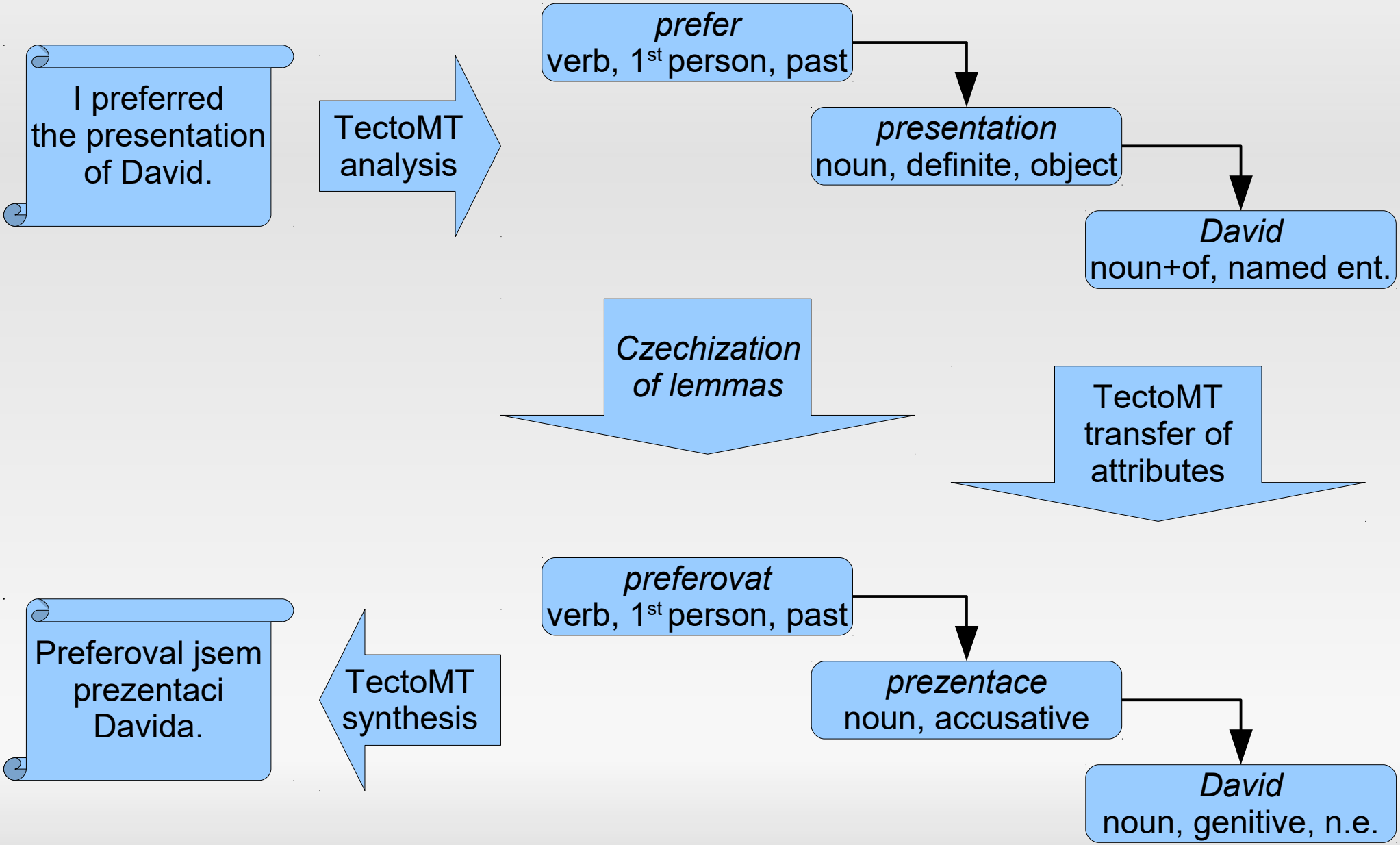

Transformation rules for adjectives

- partial → parciální
- stable → stabilní
- tolerant → tolerantní
- tolerated → tolerovaný
- turkic → turkický
- practical → praktický
- native → nativní
- regular → regulární
- fatal → fatální
- nervous → nervózní
- parsed → parsovaný
- parsing → parsující
- park → parkový

What is it good for?

- translations sometimes “reasonable”
  - scientific titles and abstracts, marketing texts

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  - scientific titles and abstracts, **marketing texts:**
  - Accenture Operations combines technology that digitizes and automates business processes, unlocks actionable insights, and delivers everything-as-a-service with our team's deep industry, functional and technical expertise.
  - Operacions acenturu kombinuje technologii, která digitizuje a automuje procesy businosti, unlokuje akcionabilní insajty a deliveruje everyting-as-a-servicová s funkcionální a technickou expertizou dípové industrie našeho tímu.

What is it good for?

- translations sometimes “reasonable”
  - scientific titles and abstracts, marketing texts
- still, only a proof of concept & a fun application
  - not really useful as a standalone tool
  - *maybe* as a starting point for later post-editing

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  - *maybe* as a starting point for later post-editing
- potential: combine with TectoMT lexical models
  - frequent words: translation model trained from data
  - infrequent words: insufficient training data, Czechize!

Complementing TectoMT

- rare/unseen words not well handled by TectoMT
  - unreliable translation for rare words, none for unseen
- e.g. scientific terms
  - large number and growing, rare in data
  - often rather regular translations → can be Czechized
  - anaphora → anafora
    hypotactical → hypotaktický
    circumfixal → cirkumfixální

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- current issues: named entities get Czechized
  - usually should be avoided, but detection insufficient

Conclusion

- lexicon-less lexical “translation” module
  - transformation (endings) and transliteration rules
- grammar and aux words handled by TectoMT
  - Czechization of lemmas on t-layer
- Czechization of scientific titles sometimes “good”
  - but still not really useful
- work in progress: integrate into TectoMT
  - complement existing lexical models
  - Czechize rare and unseen words, e.g. science terms

Thank you for your attention

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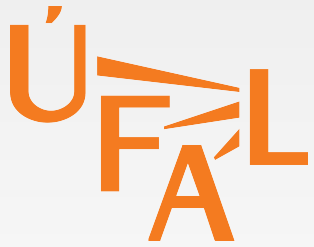

http://ufal.mff.cuni.cz/rudolf-rosa/

Examples: parsing papers

- The theory of parsing, translation, and compiling
- Accurate unlexicalized parsing
- An efficient context-free parsing algorithm
- Seven principles of surface structure parsing in natural language
- Head-driven statistical models for natural language parsing
- Parsing by chunks
- Shallow parsing with conditional random fields

Examples: parsing papers

- Teorie parsování, translace a kompiluje
- Akuratová unlexikalizovaná parsování
- Eficientová kontext-fríová parsování algoritm
- 7 principlů struktur surface parsování v naturální langvaži
- Híd-drivenové statistické modely pro naturální langvaž parsování
- Parsují Chunky
- Šalovujte, parsujete s kondicionálními randomovými Fieldy