Comparing morphosyntactic indicators of power in Classical Latin texts and their English translations
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Motivation

- **Problem Setting**: Want to analyze power and agency in narratives, but current methods are **mostly limited to English** and **depend on verb morphology**
- **Why Latin?** It has a long history of English translations, making it a unique testbed for computational translation studies
- **Goal:** quantify morphological changes that happen during translation from source (Latin) to target (English)

Example: Voice Changes and Voice and Verbform Changes

|	
Apuleius *Met.*	crassaque soporis nebula cunctis eius membris perfunditur
Literal	a cloud … is diffused …
Kenney (1991)	and diffused itself in a black cloud of oblivion throughout her whole body
Relihan (2007)	Sleep … pours itself over every one of her limbs in a coagulated and comatose cloud
Ruden (2011)	engulfing her in a thick cloud of unconsciousness

Pipeline
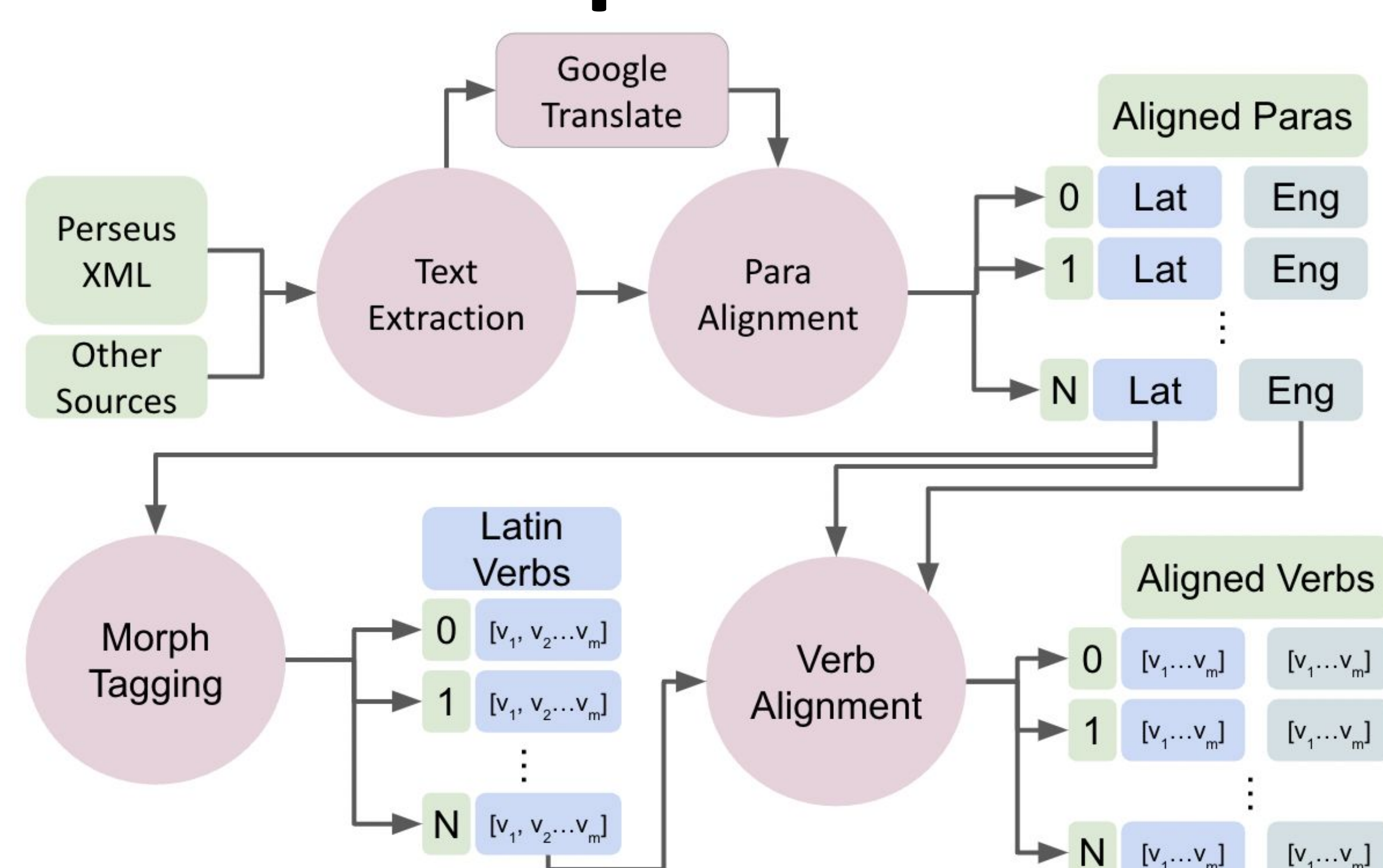
Dataset

- 89 Latin texts with 92 English translations, from **Perseus Project**
- 23,534 Latin paragraphs; 25,628 English
- ~62 Latin tokens per paragraph; ~106 English

LatinBERT Morph-Tagger

Training Treebank	Model Architecture	Passive F-score
Perseus	Voice-Only	0.78
	Cross Product	0.81
	2 heads	0.80
Proiel	Voice-Only	0.87
	Cross Product	0.88
	2 heads	0.88
Perseus + Proiel	Voice-only	0.88
	Cross Product	**0.89**
	2 heads	0.86
	Latin spaCy	0.81

Verb Alignment

Awesome-Align (mBERT)   **GPT4**
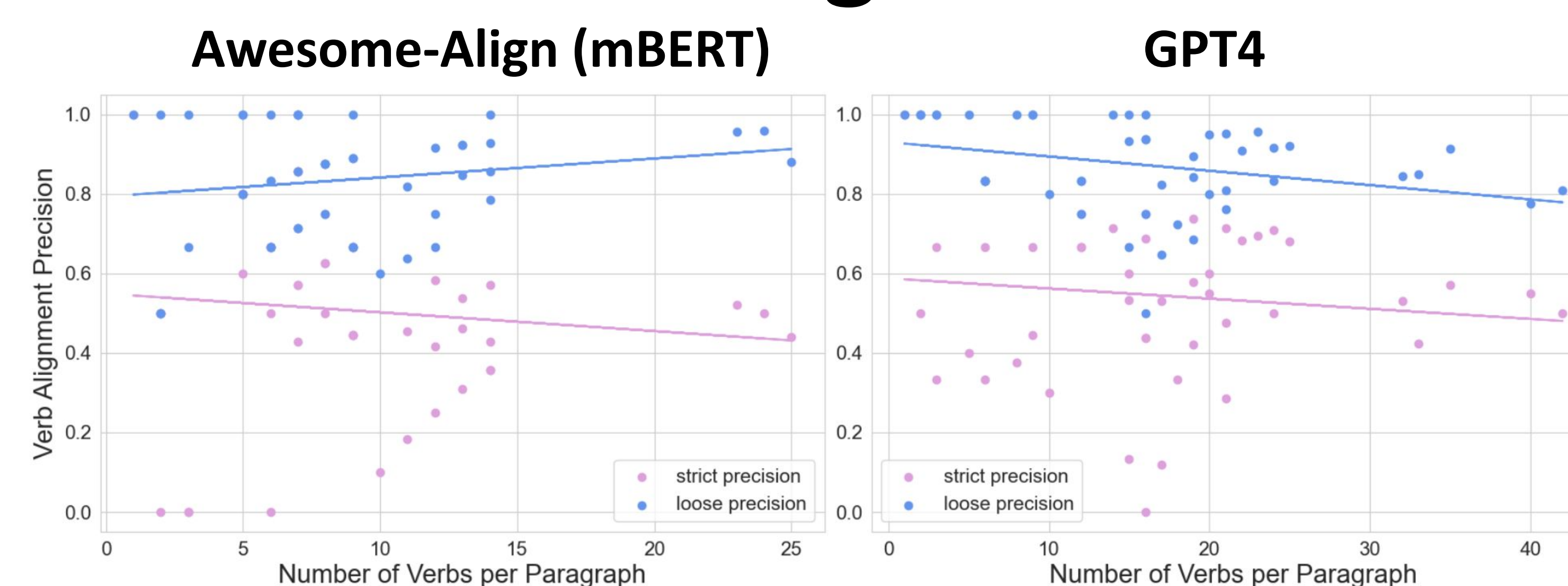
- Tested **verb alignment precision** on 46 crowdsourced word alignments from the Ugarit (Yousef 2023)
- Trained **Awesome-Align** (Dou 2021) on
  - 17,000 parallel Bible sentences
  - 70,000 google translated sentence pairs
  - 20,000 automatically aligned paragraphs
- Average Awesome-Align precision: 0.75
- Average GPT4 precision: 0.85

Limitations

- Inconsistent formatting of Perseus data make **text extraction** difficult
- Existing tools for Latin **morphological tagging** are not accurate enough on rarer forms
- **Sentence alignment** is ideal, but difficult
  - Automatically aligned paragraphs have more content overlap than sentences
- Few datasets for training Latin **word alignment** models

Verb Transition Results

Voice Trends
- Passive Latin verbs are more likely to be translated as Active than vice versa
- Epics, treatises, and satires are less "faithful"

Voice Transition Mismatch Rates by Genre
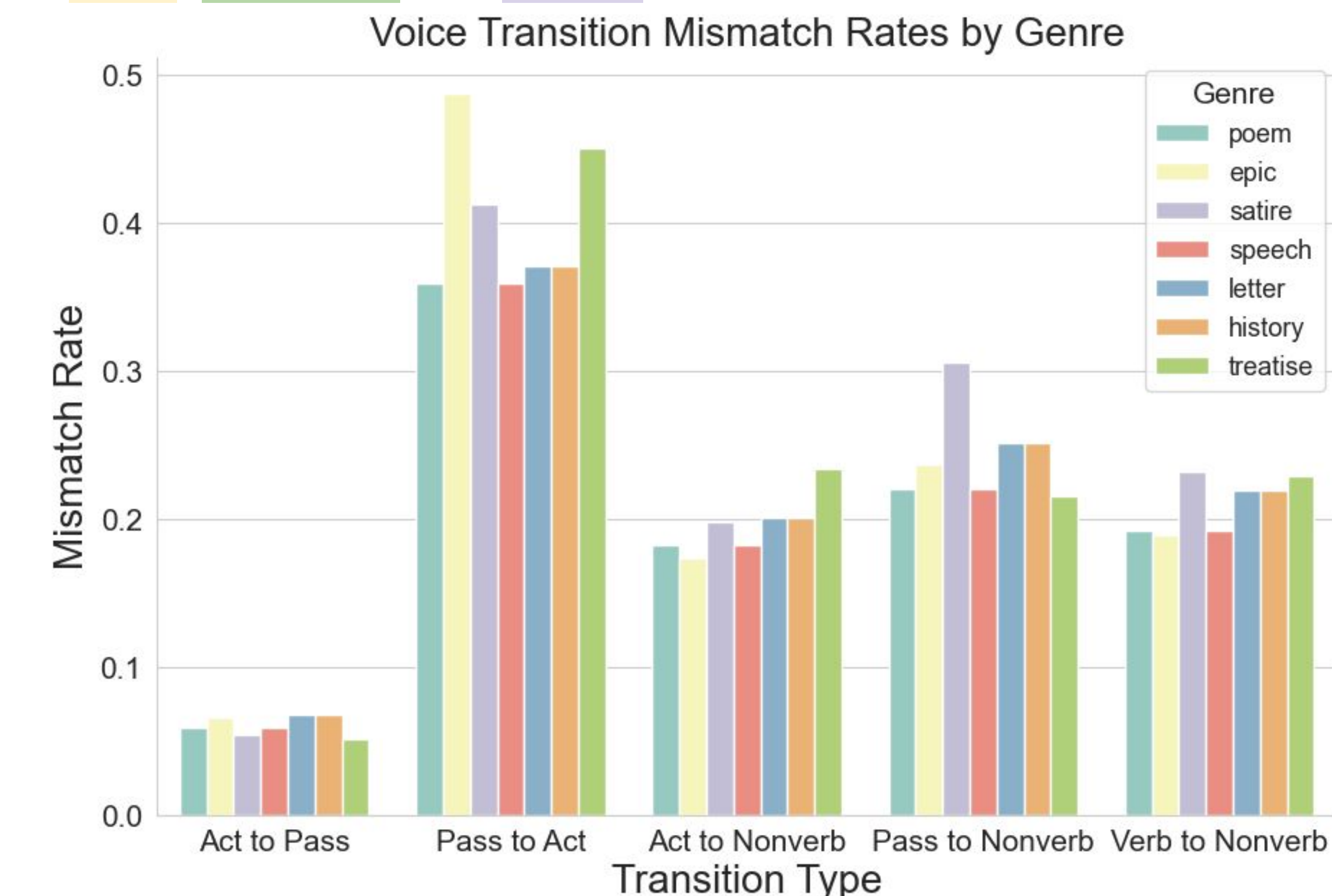
Verbform Trends
- Slightly less than half of infinitives translated to finite verbs
- Participles translated to non-verbs 30-40% of the time
- Epics and treatises are less faithful
- Speeches are most faithful

Verbform Transition Mismatch Rates by Genre
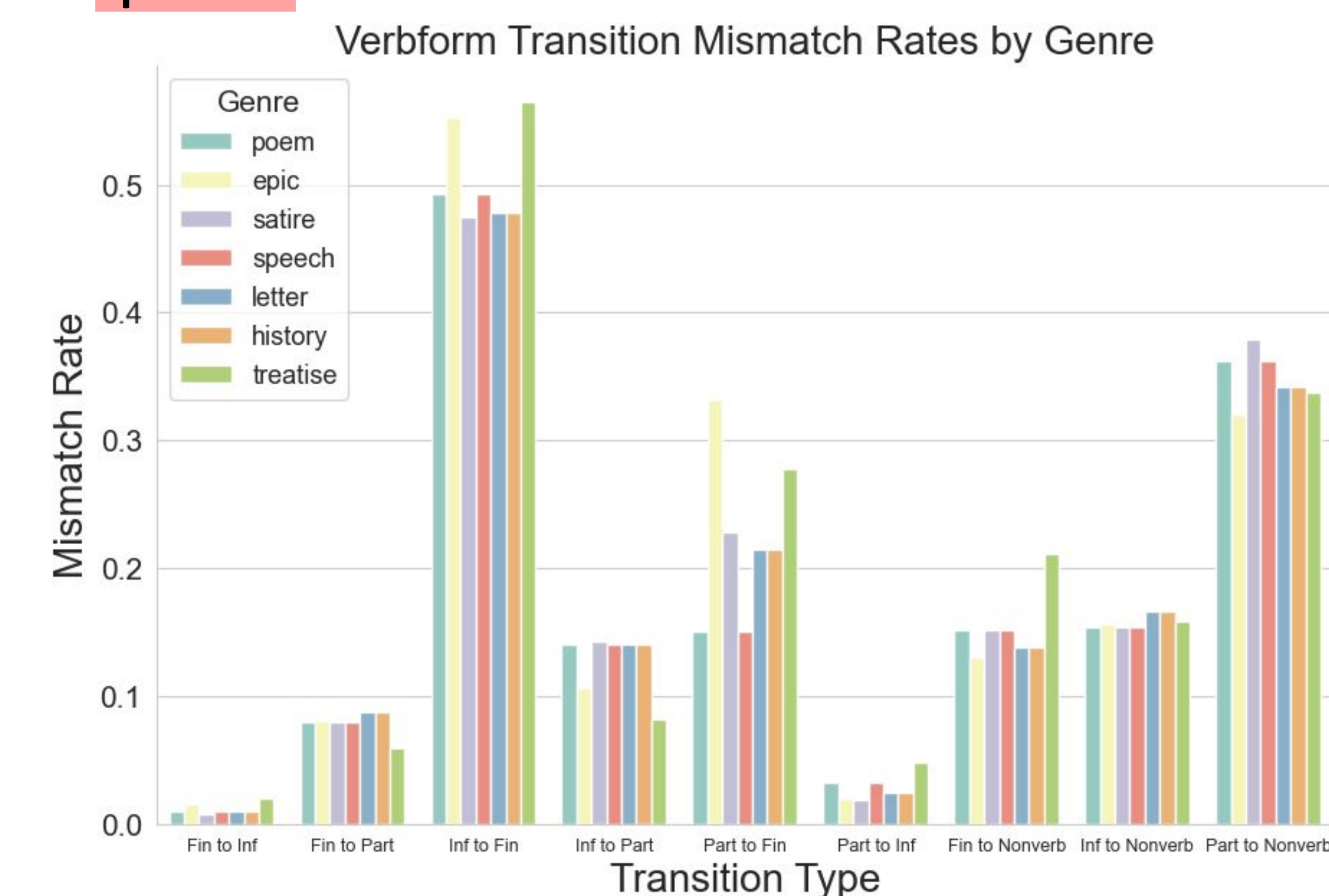
Implications
- Important to consider the source language
- If you only analyze target verbs, you won't capture source verbs translated to **non-verbs**
- **Morphological differences** between source and target languages can directly impact measures of power and agency