# Comparing cross-language phonological profiles

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presentation is available here: tinyurl.com/yj2tacek

# How I decided to give this talk?

- During the talk in our Lab with Misha and Ezequiel

**Jeff Good:** How you came up with the idea of calculating phonological distances? Is it some established procedure?

**Me:** No, we thought that it is the most obvious step…

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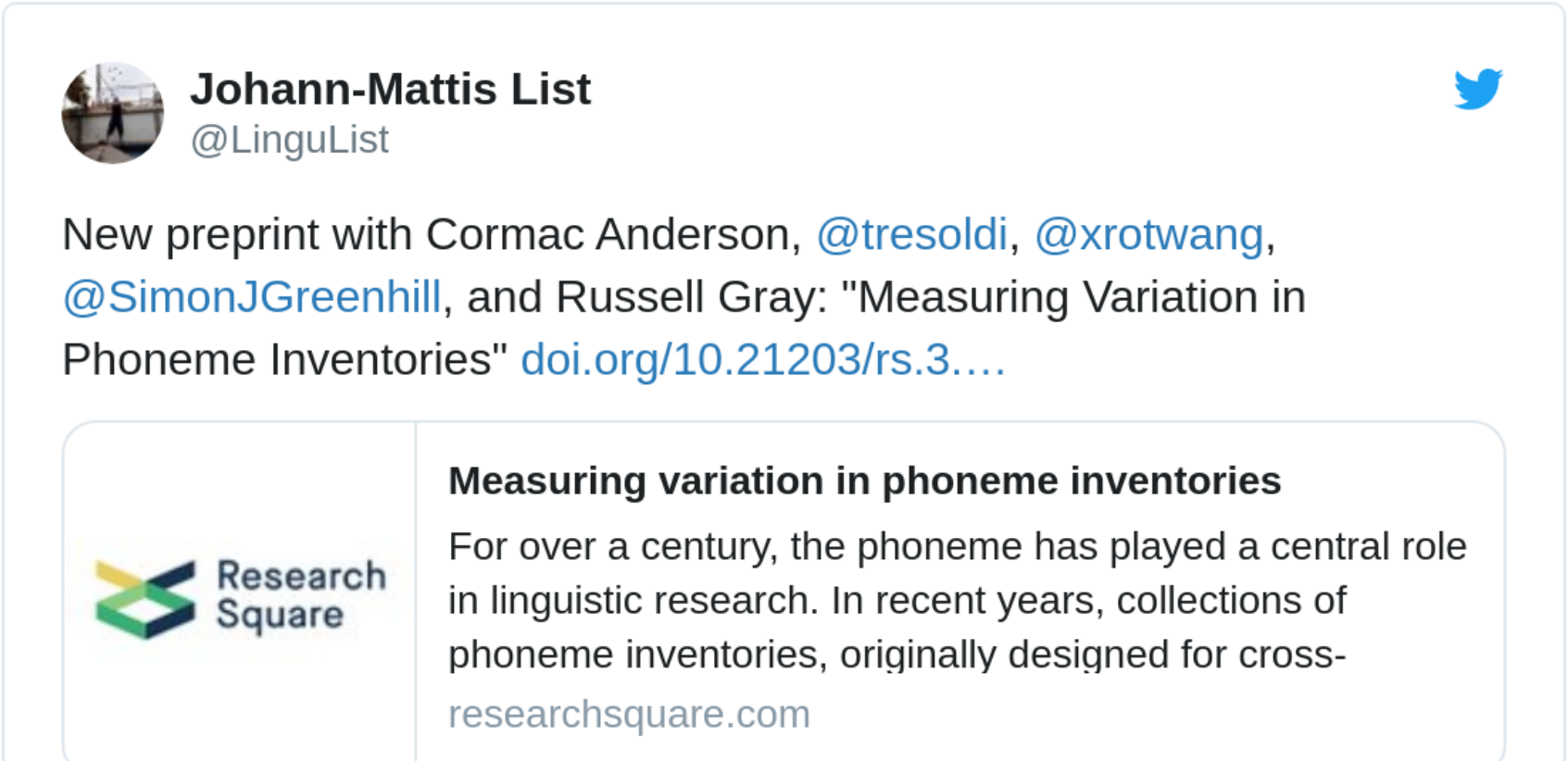
- The second reason:



# Overview

Materials for the analysis

Criticism by [Simpson 1999]

Complexity based approaches

Distance based approaches

# Materials for the analysis

Materials for the analysis can be different:

- segment[1] inventory (and grammar, if you are lucky);
- dictionaries;
- parallel corpora;
- unparalleled corpora.

[1] Lets leave the phonology vs. phonetics debate aside.

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[Simpson 1999] attacks UPSID[1]-like researches:

- phoneme masks allophones
  - Standard High German /ç/ stands for [ç], [x] and [χ];
  - "The allophone no longer represents the phoneme, it *replaces* it";
- phonological relations between segments is lost
  - comparing just vowel inventories it is impossible to get information about e. g. vowel harmony;
- there is no non-arbitrary way of assign phonological features (e. g. SPE [Chomsky and Halle 1968]) to segments.

[1]UPSID stands for UCLA Phonological Segment Inventory Database [Maddieson and Abramson 1987] which consists of the phonemic systems of a representative sample of 451 (this number changes from publication to publication) of the world's languages in machine-readable form. Now UPSID can be accessed via PHOIBLE database [Moran and McCloy 2019].

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My metaphor: omelet and pancakes share all ingredients, but they are significantly different meals.

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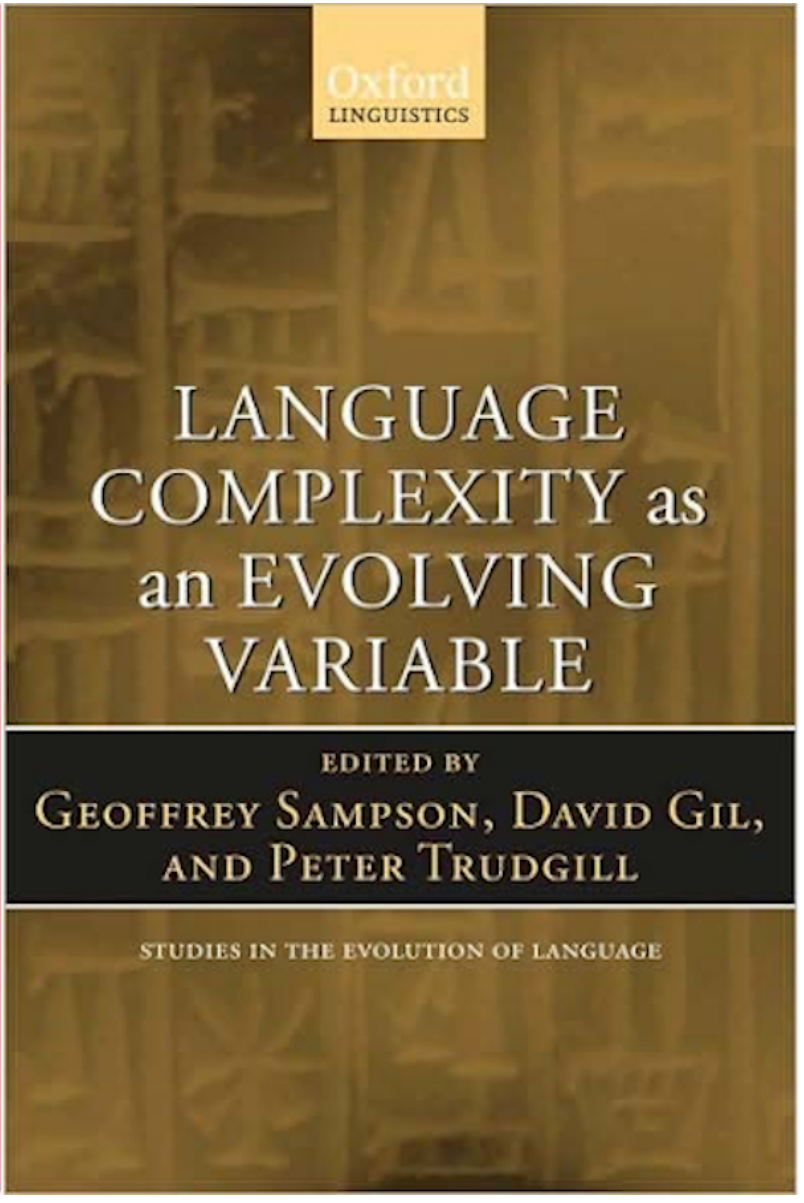
# [Pellegrino et al. 2009] and [Sampson et al. 2009]

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- [Pellegrino et al. 2009]
  - [Ohala 2009]
  - [Maddieson 2009]
  - [Coupé et al. 2009]
- [Sampson et al. 2009]
  - [Nichols 2009]
  - [Deutscher 2009]

# [Nichols 2009]

The main goal of this paper is to calculate overall complexity for a typological sample of languages based on phonology, synthesis, classification (gender, numeral classifiers), syntax, and lexicon. The main goal is too prove:

- that all languages **are not** equal in complexity;
- that different parts of grammar **do not** compensate for complexity in other parts of grammar.

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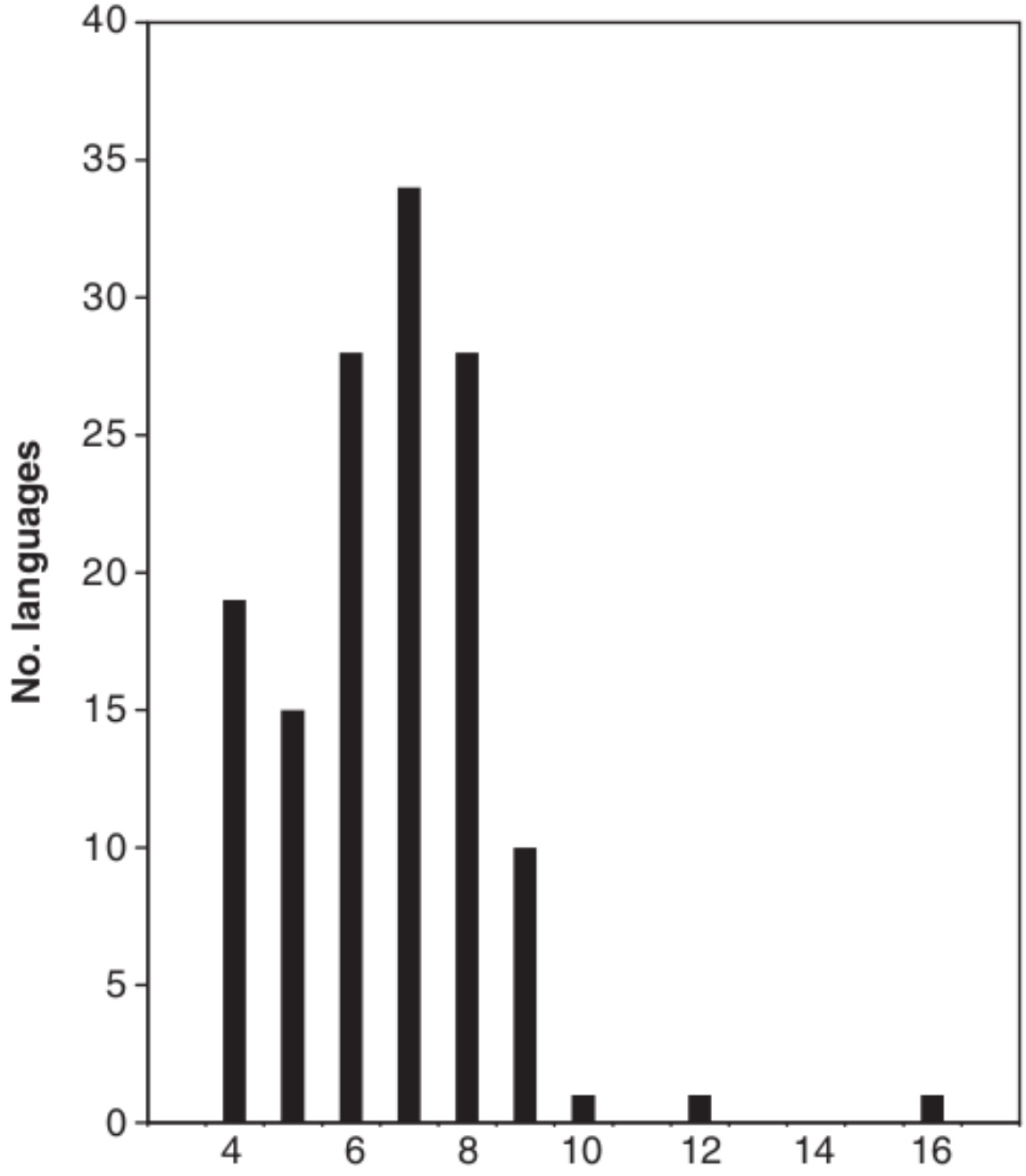
## Phonological features in the

- number of contrastive manners of articulation in stops;
- number of vowel quality distinctions;
- tone system (none/simple/complex, after [Maddieson 2013b]);
- syllable structure (after [Maddieson 2013a]).

# [Nichols 2009: 116]: results



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# Distance based approaches

- [Hoppenbrouwers and Hoppenbrouwers 2001] (after [Heeringa 2004])
- [Heeringa 2004]
- [Eden 2018] — Hamming distance
- [Anderson et al. 2021] — Jaccard similarity

Thank you for your attention!

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