

# Comparing cross-language phonological profiles

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November 9, 2021



presentation is available here: [tinyurl.com/yj2tacek](https://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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**Me:** No, we thought that it is the most obvious step...

- The second reason:



**Johann-Mattis List**

@LinguList



New preprint with Cormac Anderson, @tresoldi, @xrotwang, @SimonJGreenhill, and Russell Gray: "Measuring Variation in Phoneme Inventories" [doi.org/10.21203/rs.3...](https://doi.org/10.21203/rs.3...)



## Measuring variation in phoneme inventories

For over a century, the phoneme has played a central role in linguistic research. In recent years, collections of phoneme inventories, originally designed for cross-researchsquare.com

# 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<sup>1</sup> inventory (and grammar, if you are lucky);
- dictionaries;
- parallel corpora;
- unparalleled corpora.

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<sup>1</sup>Lets leave the phonology vs. phonetics debate aside.

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## Criticism by [Simpson 1999]

[Simpson 1999] attacks UPSID<sup>1</sup>-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  - “The allophone no longer represents the phoneme, it *replaces* it”;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.

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<sup>1</sup>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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# Overview

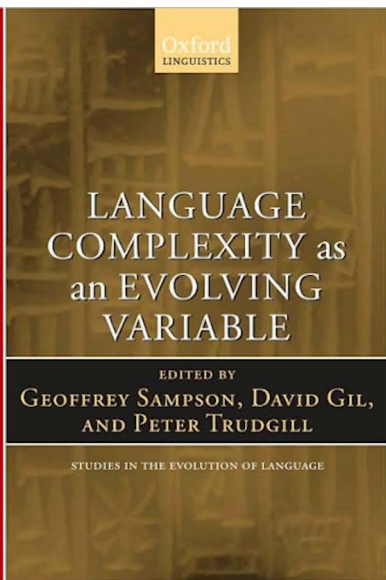
Materials for the analysis

Criticism by [Simpson 1999]

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



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

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

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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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