What 50 Million Drawings Can Tell Us About Shared Meaning

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How to interrogate shared meaning?

Drawings as a window into meaning

50M drawings across 345 categories (*N* = 15M)

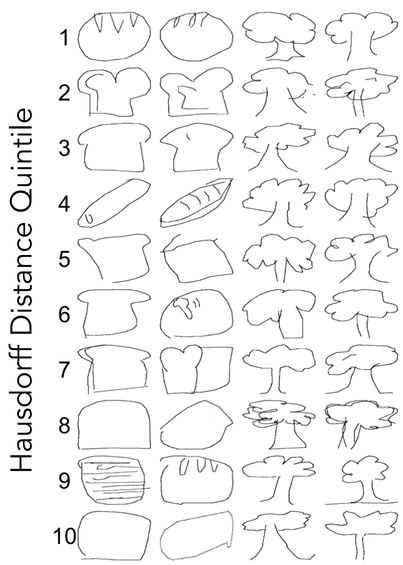
quickdraw.withgoogle.com

Quantifying Similarity

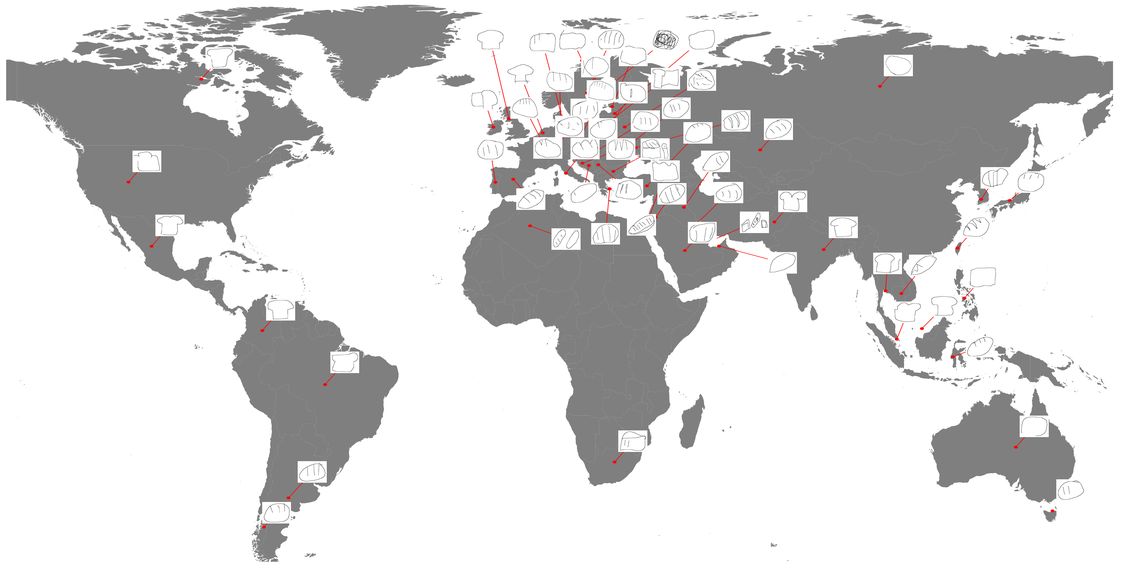
Hausdorff Distance — drawing similarity as the minimum Euclidean distance between two sets of points (Huttenlocher, Klanderman, & Rucklidge, 1993).

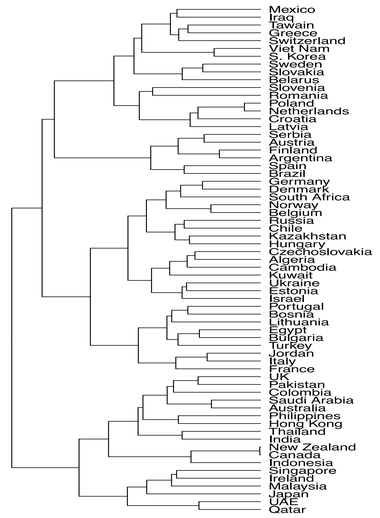
Measure Validation:

- 1500 drawing pairs from two categories
- 20 pairs from each decile of similarity/item
- Each participant (*N* =100) rated similarity for 50 pairs on 7pt scale
- Human judgements highly correlated with Hausdorff Distance (*r* = .29; *p* < .001)



Cross-Cultural Variability in Drawings





Predicting Variability with Language

Drawing Similarity:

- 50 drawings from each of 39 countries across 4 categories (food, weather, artifact, place)
- For each country pair, calculated mean drawing similarity for each category.

Independent Cultural Similarity Measures:

- Lexical semantics – Alignment from word embedding models (Bojanowski et al., 2016)
- Lexical forms – ASJP distance (Bakker, et al., 2009, Dediu, in press)
- Grammar – WALS distance (Dediu, in press)
- Physical distance

Lexical semantics predicts independence variance in drawing distances, suggesting that speakers of languages with more similar semantics have more similar non-linguistic representations.