Dynamic Typology

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Elena Maslova – Stanford University
Dan Dediu – MPI Nijmegen

Two different perspectives

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- Static Typology
  - investigate **attested frequencies** of language **types**

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- Static Typology
  - investigate **attested frequencies** of language **types**

- Dynamic Typology
  - **estimate probability** of **change** of a language type

Will the real OV-frequency please stand up ?

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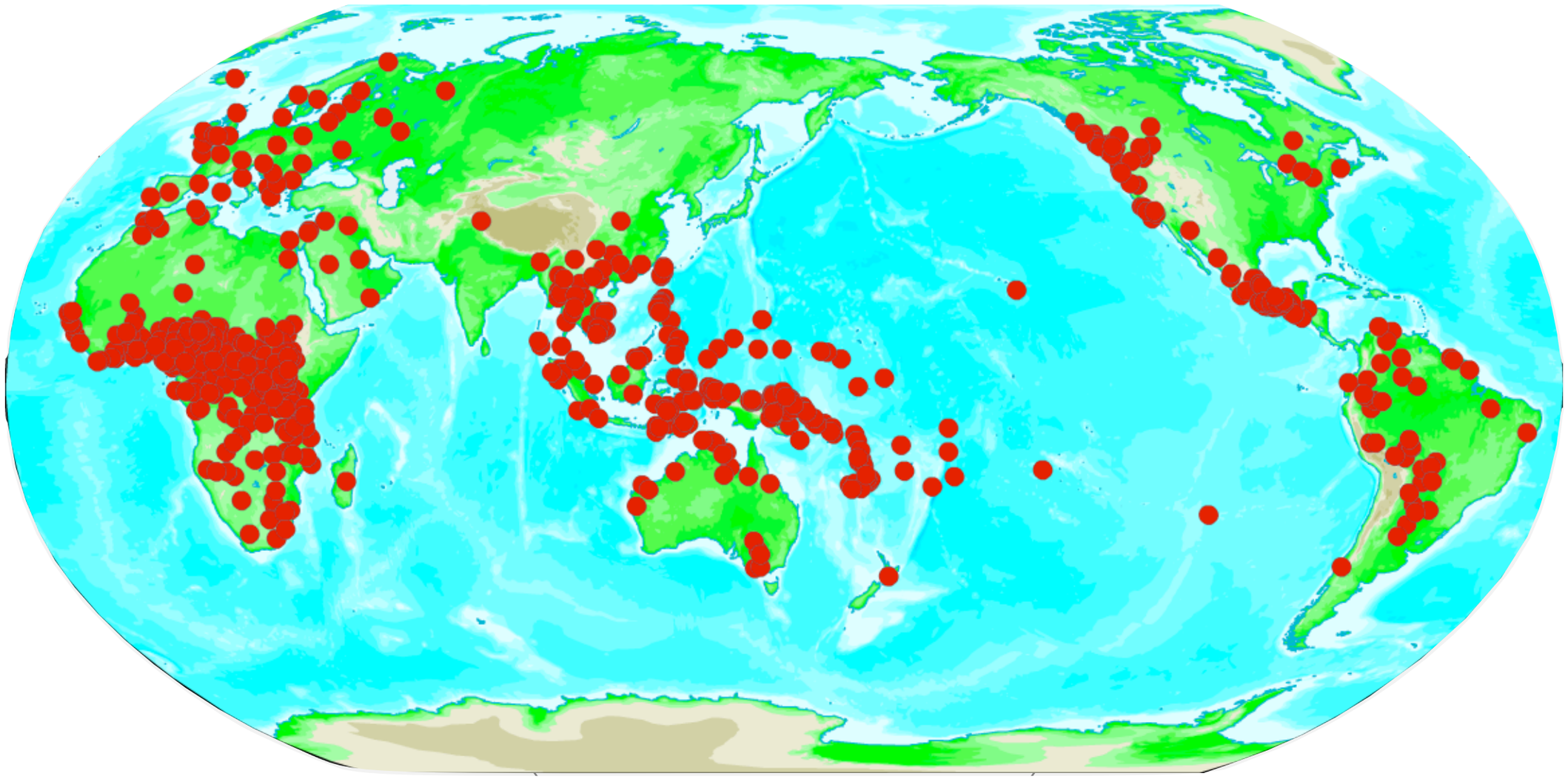

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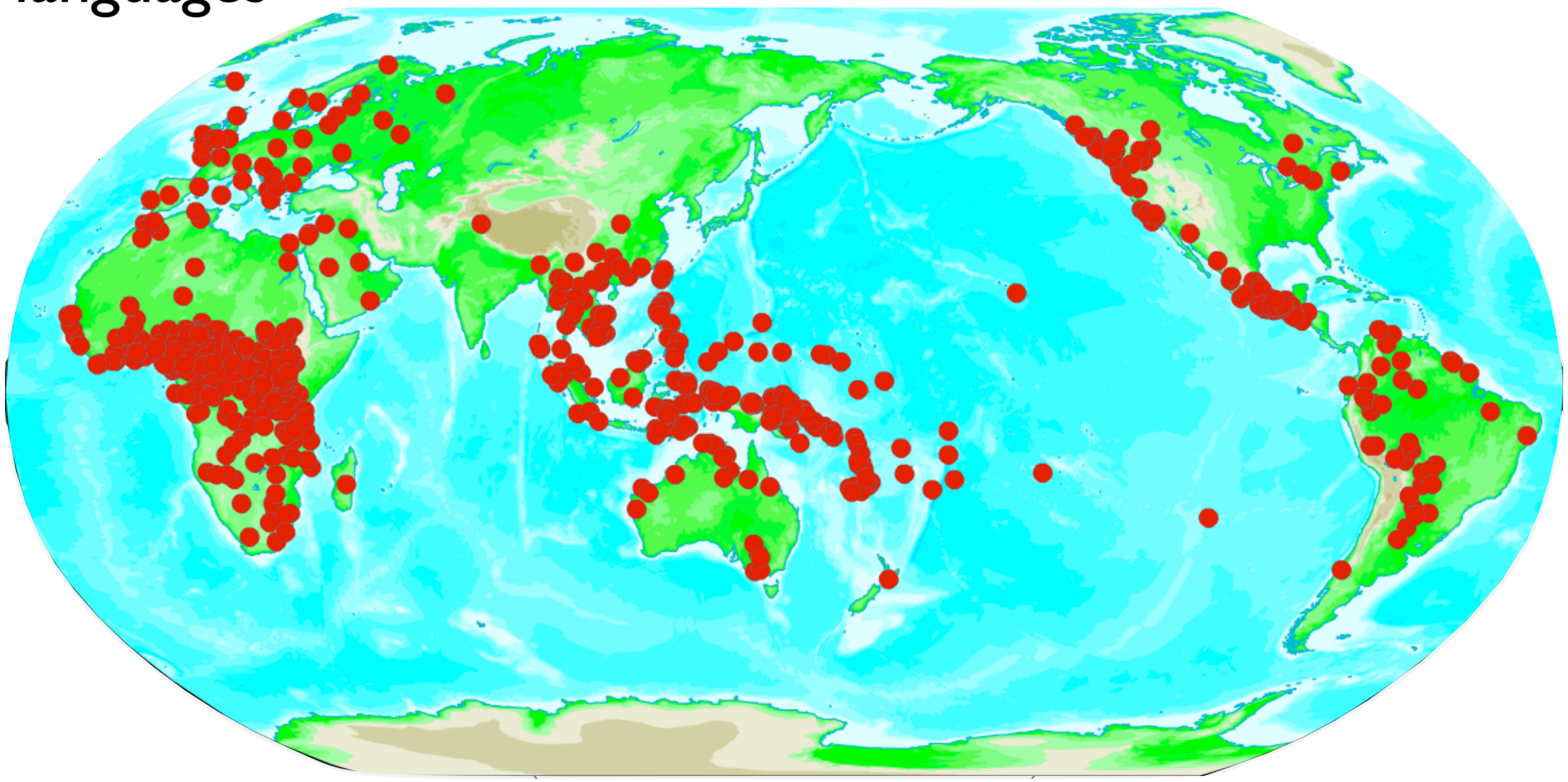
639 languages



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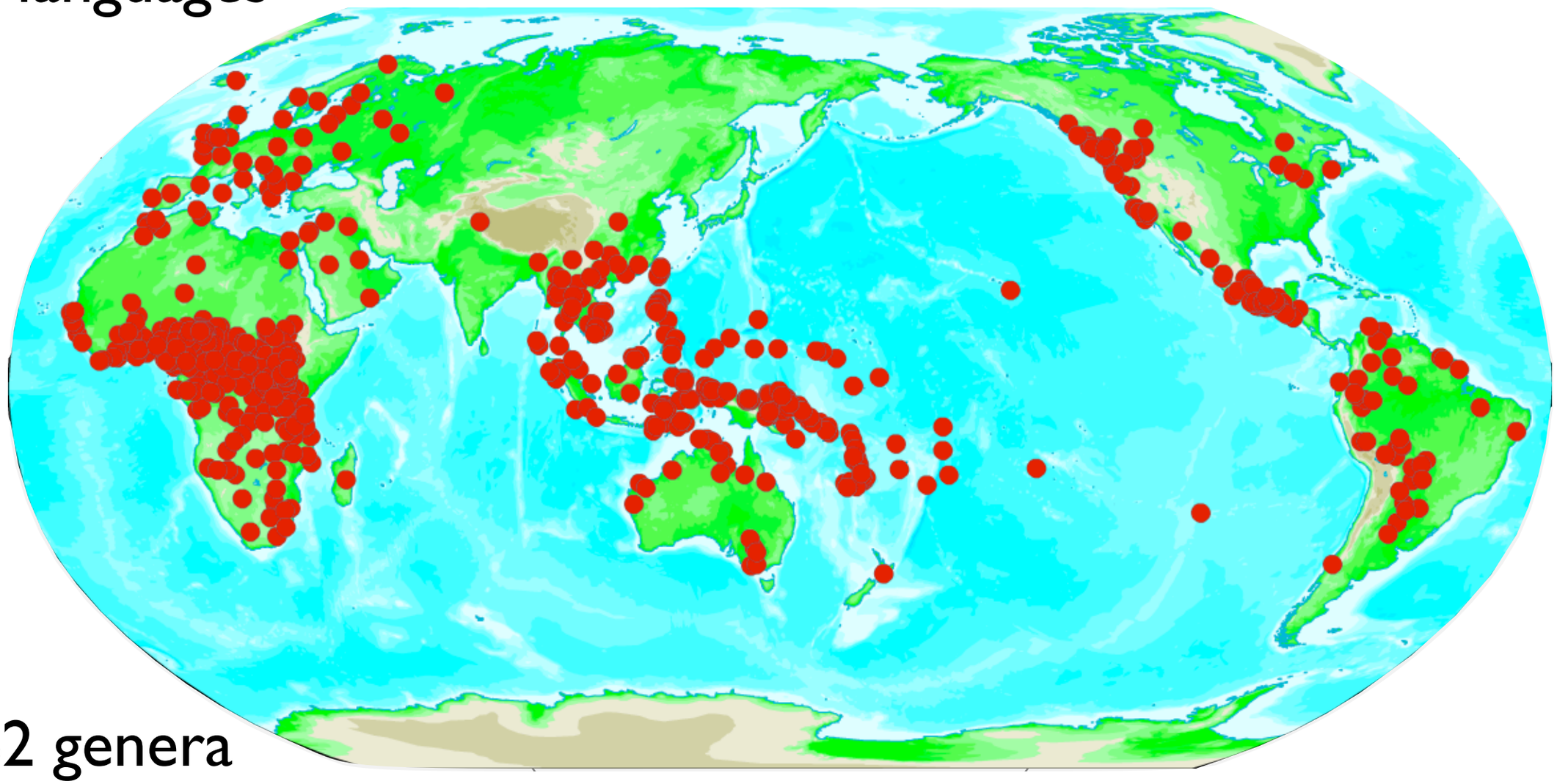

162 genera

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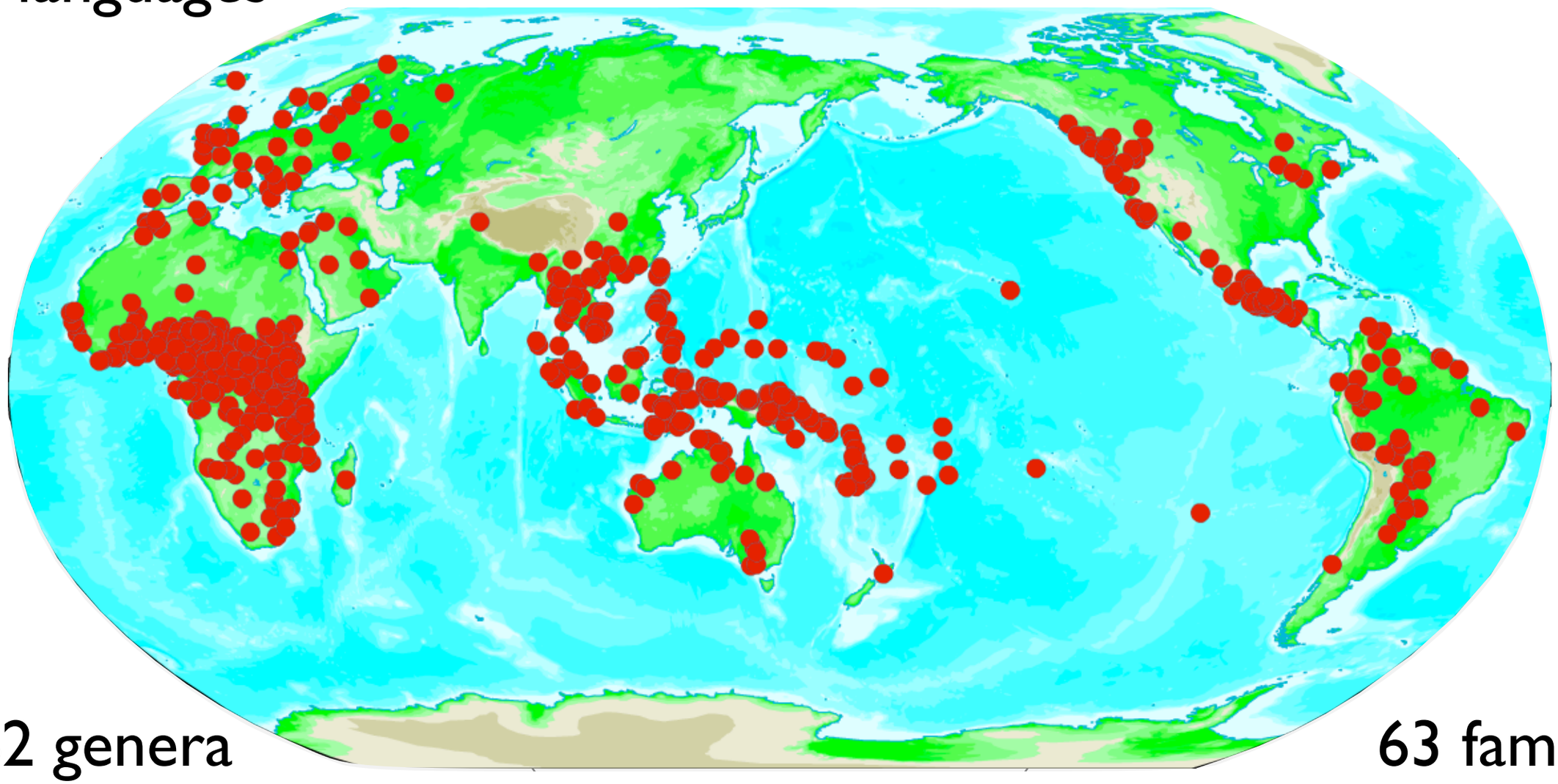

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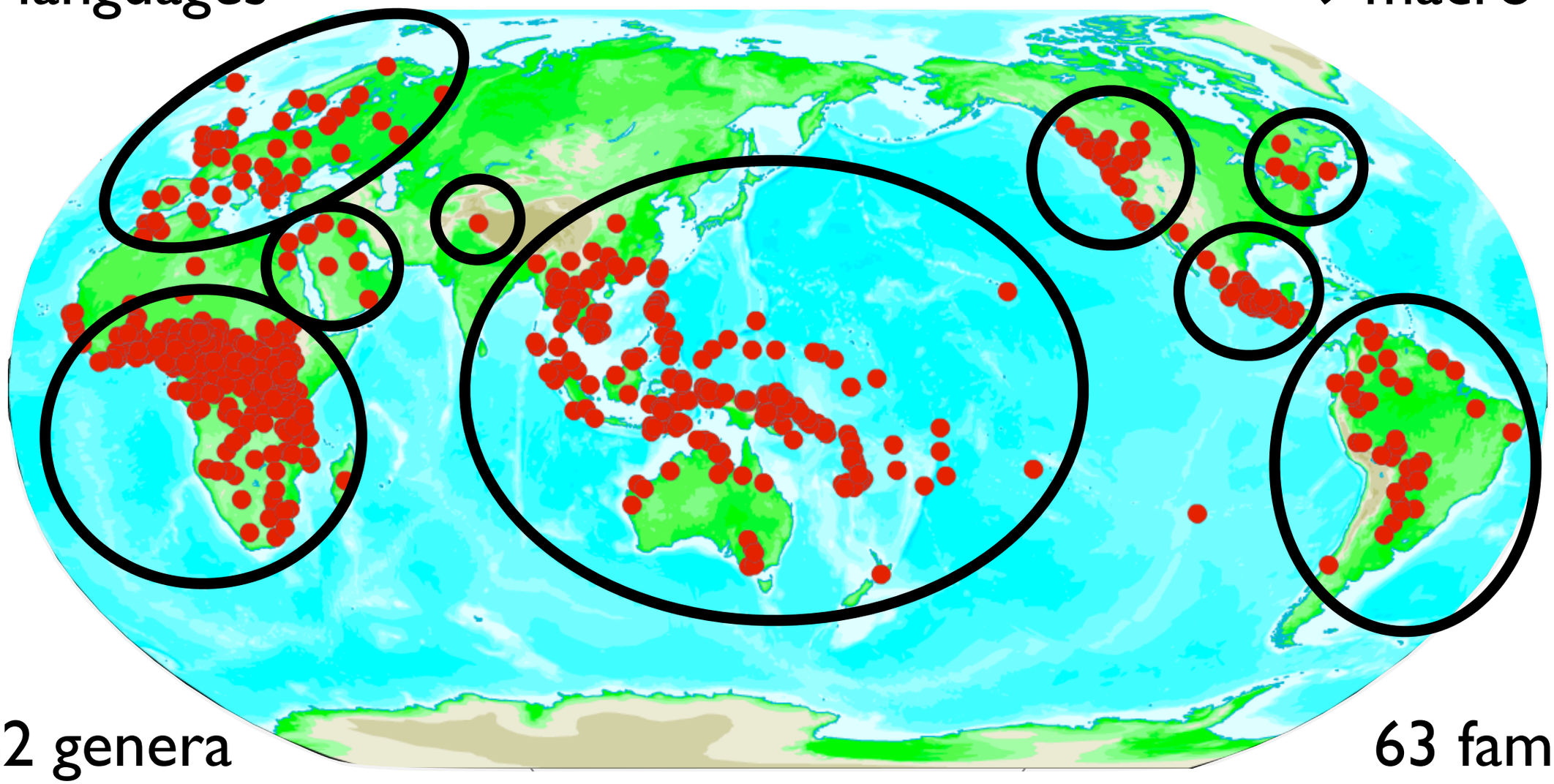
9 macro-areas



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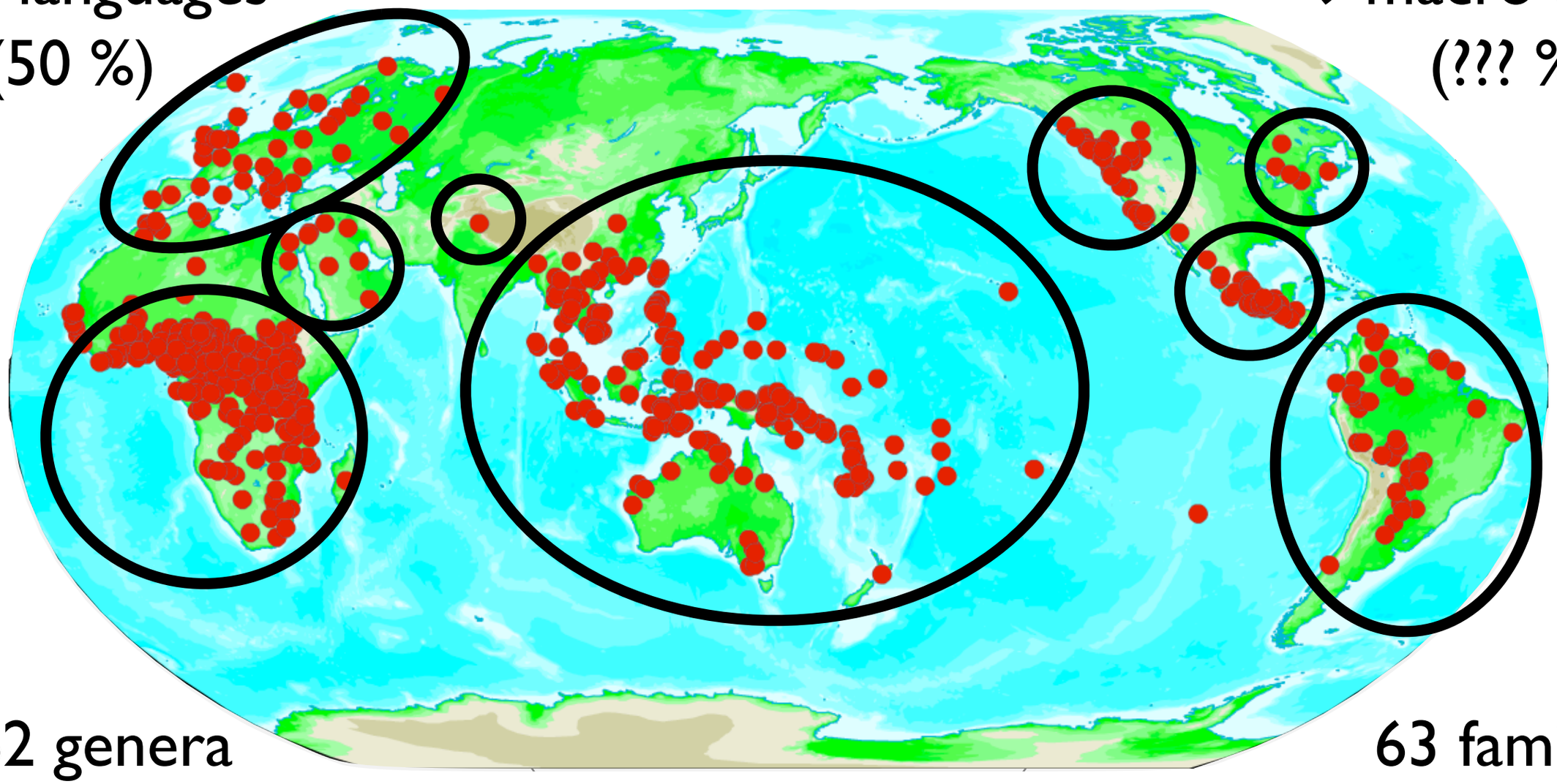
Will the real OV-frequency please stand up ?

639 languages
(50 %)

9 macro-areas
(??? %)



162 genera
(41 %)

63 families
(34 %)

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Transition Probabilities

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- Probability of type-change in a given period

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  - e.g. probability of 10 % in 1000 years

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  - internally caused
  - through contact

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  - the real (empirical) question is whether the **deviations are limited**

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Type A

Type B

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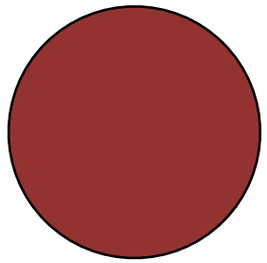
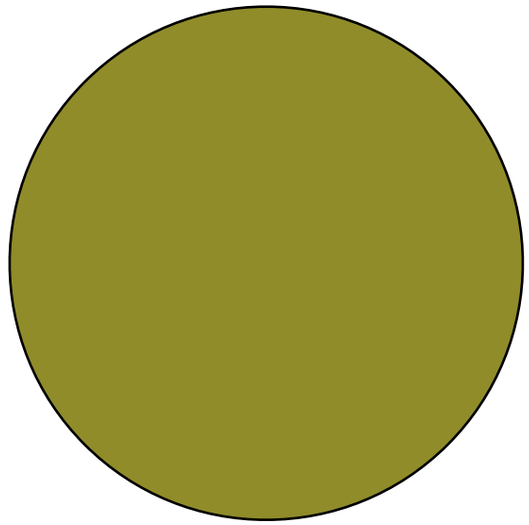


Type B



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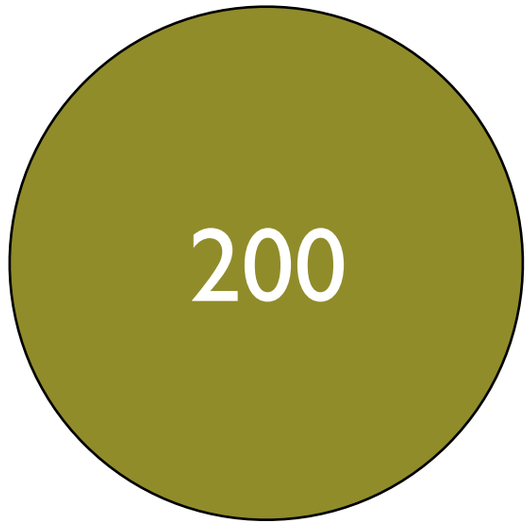

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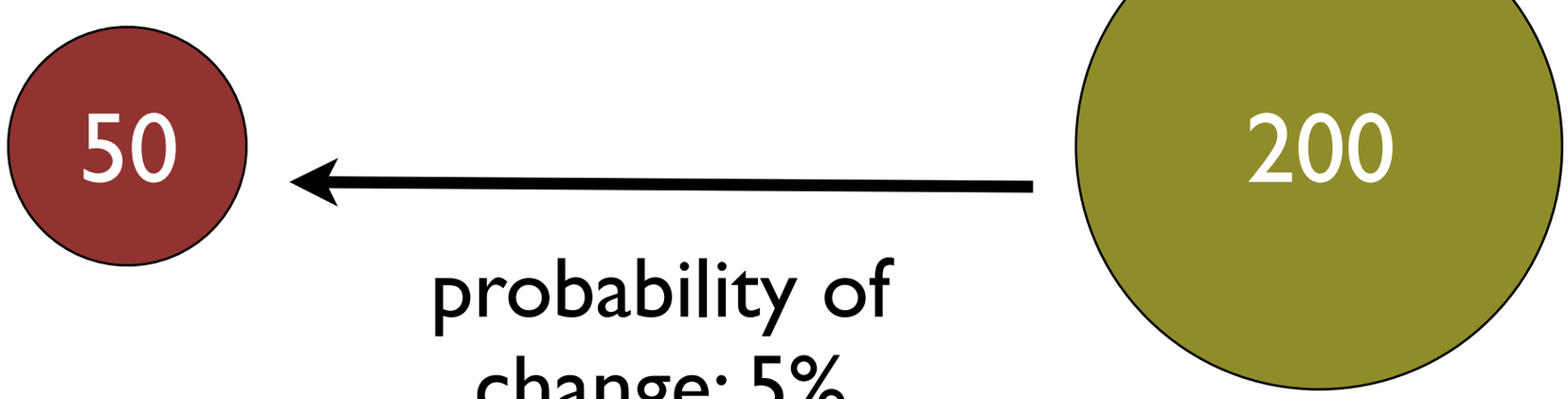

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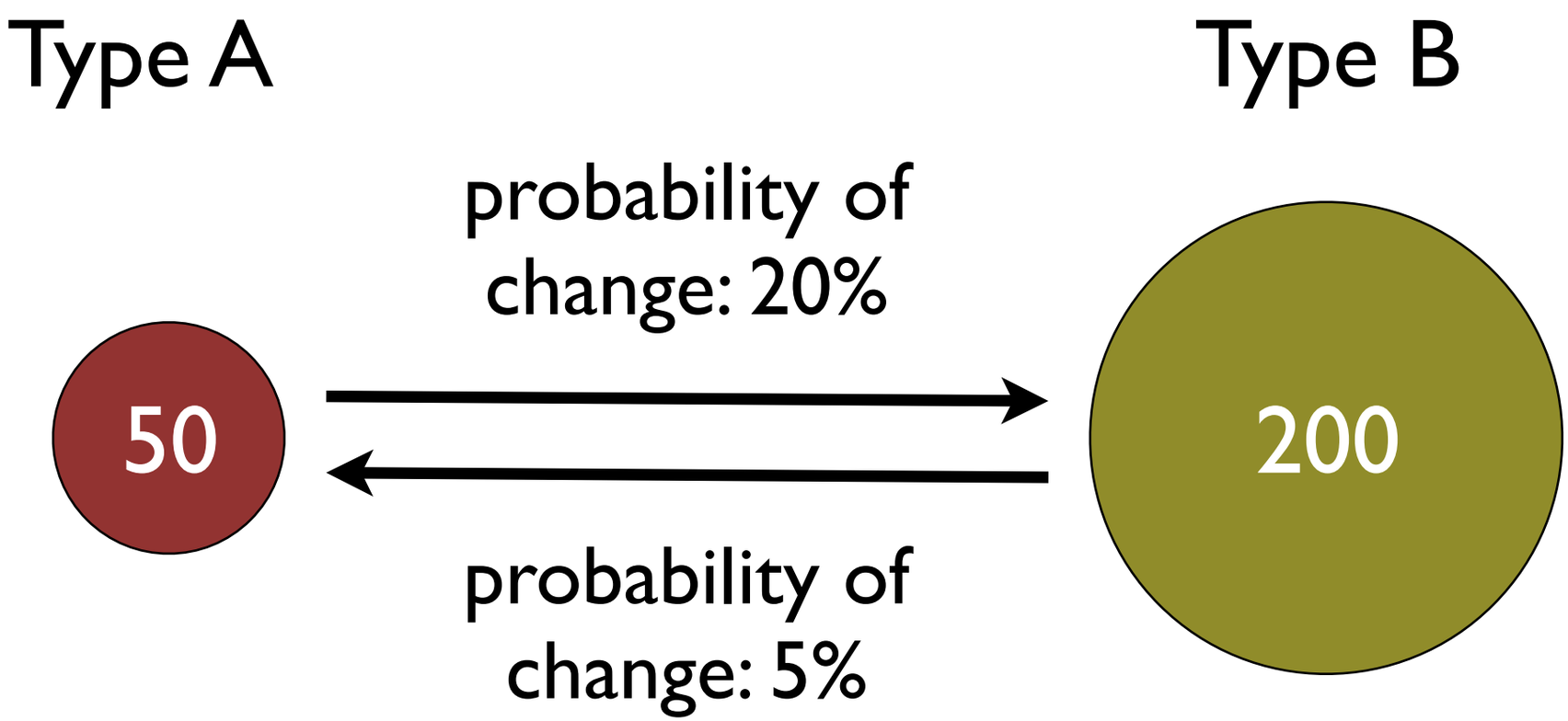

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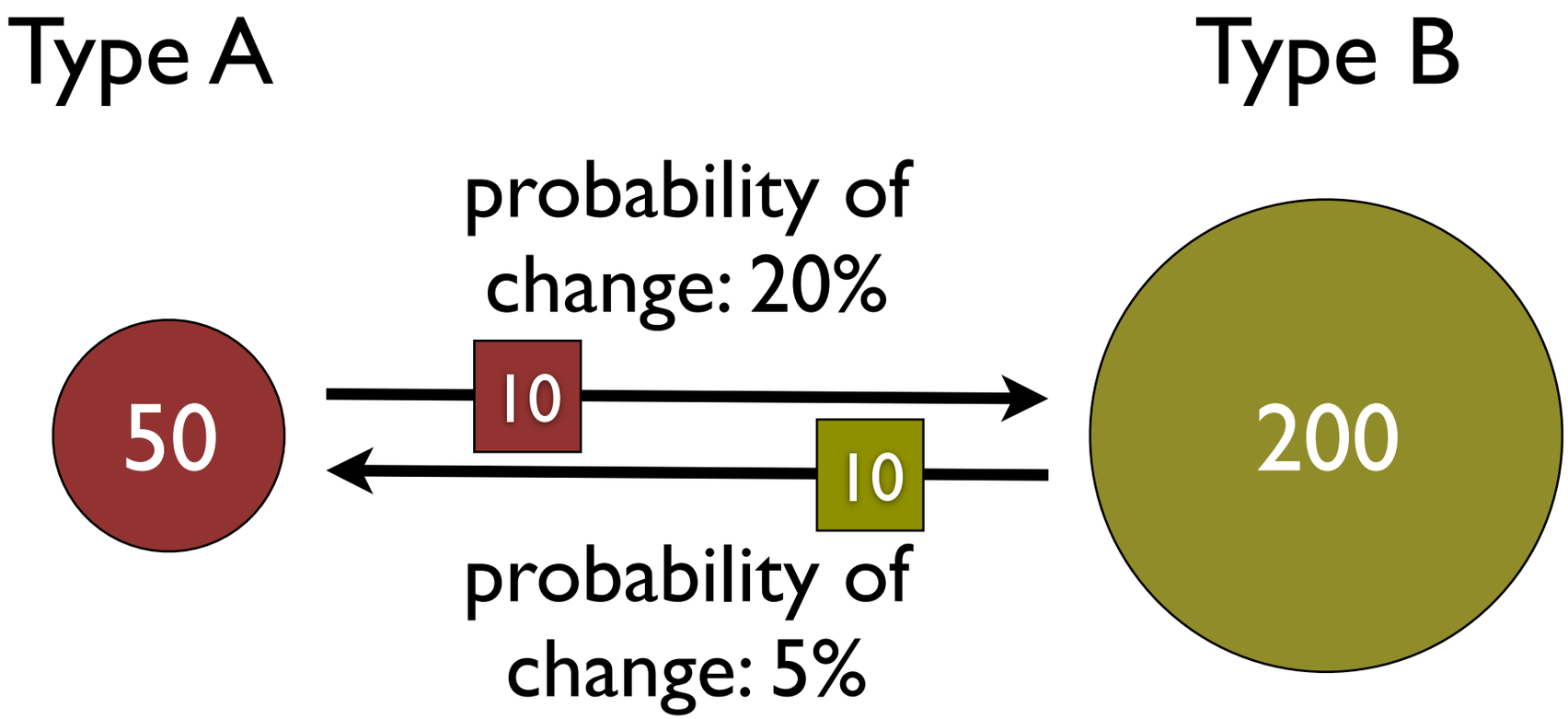

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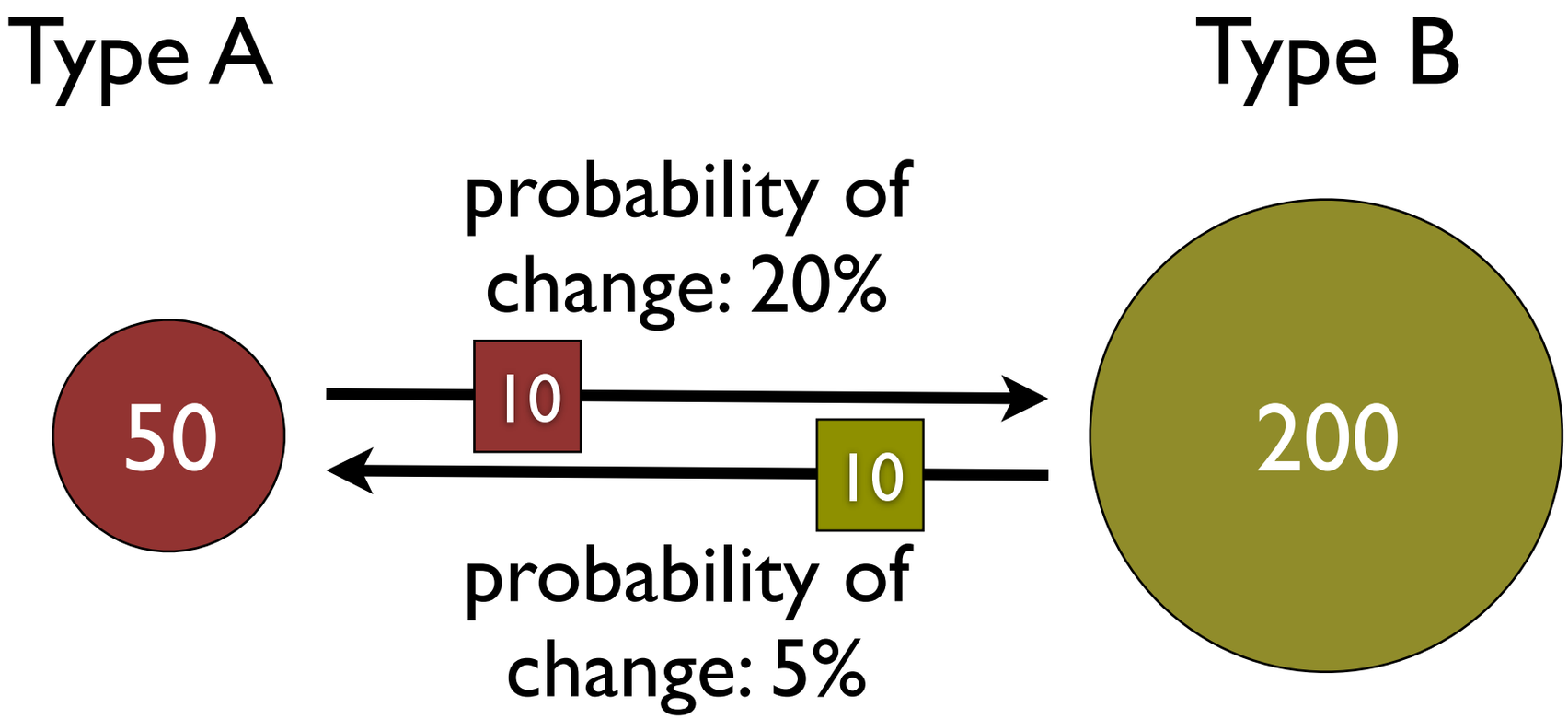

Stable distribution

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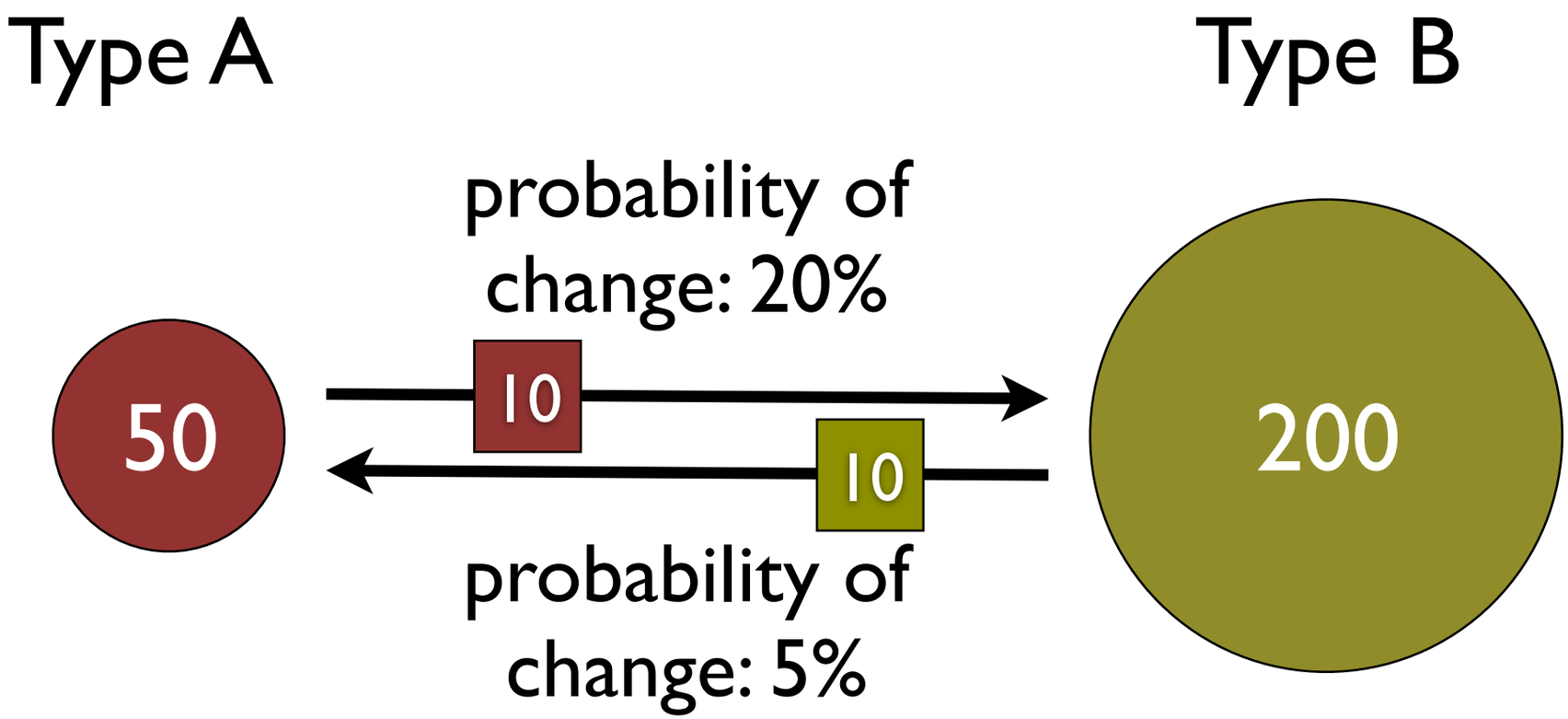

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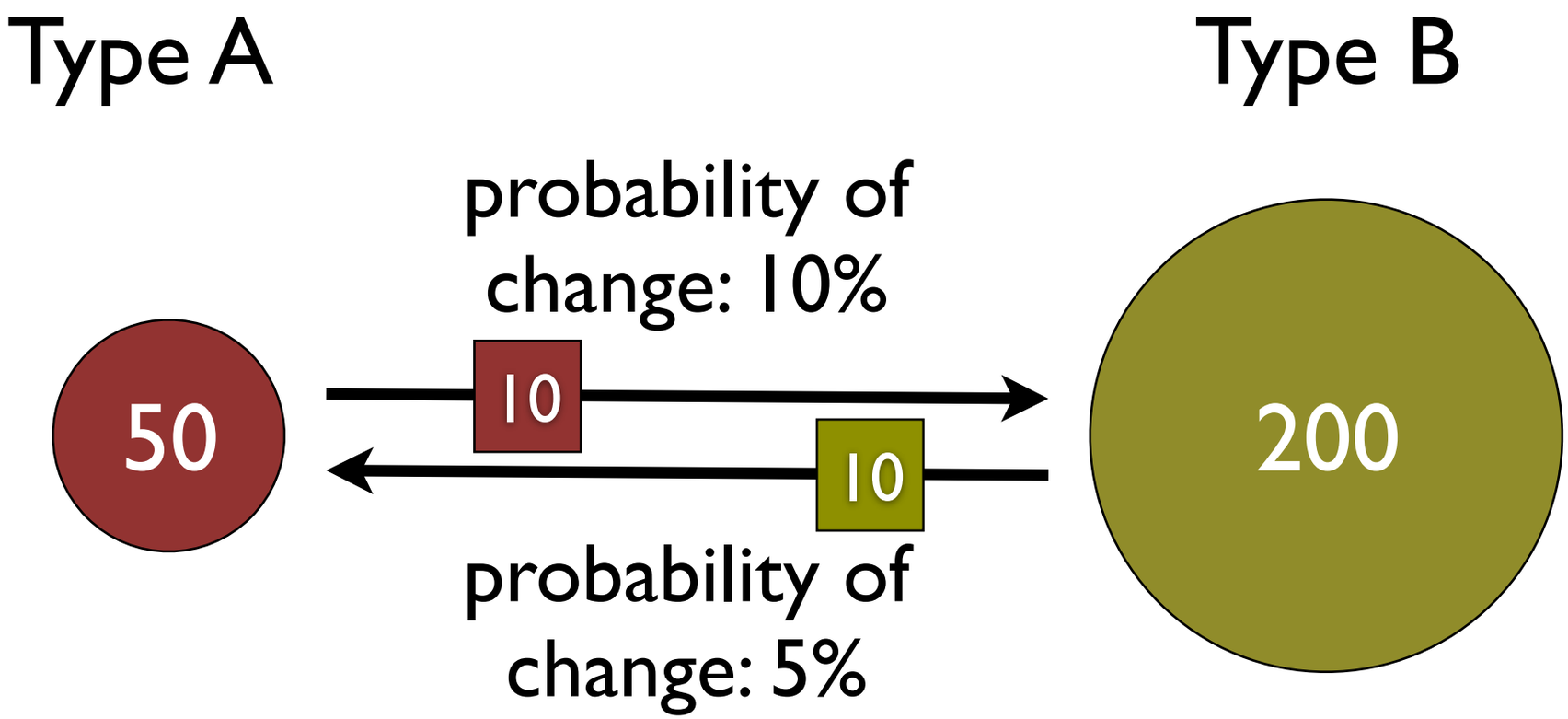

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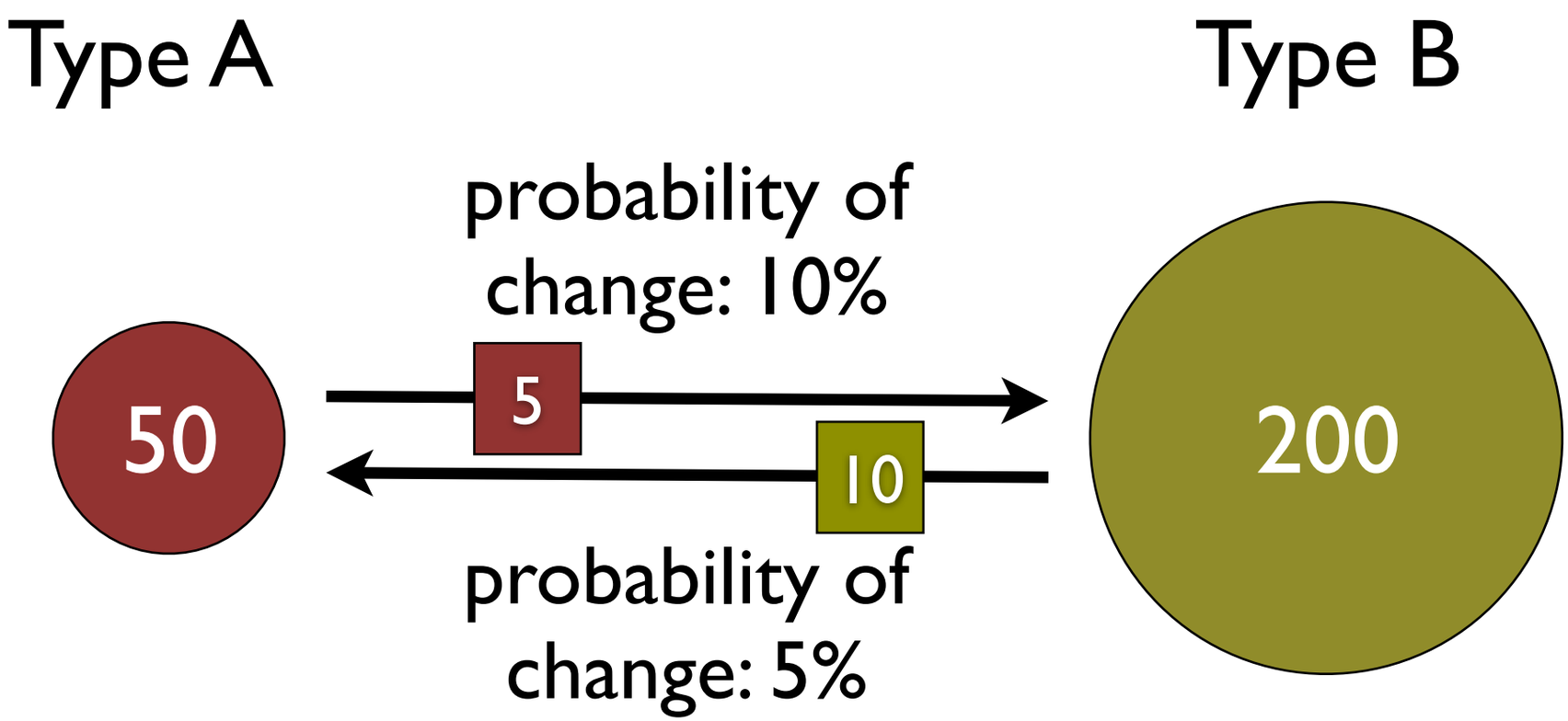

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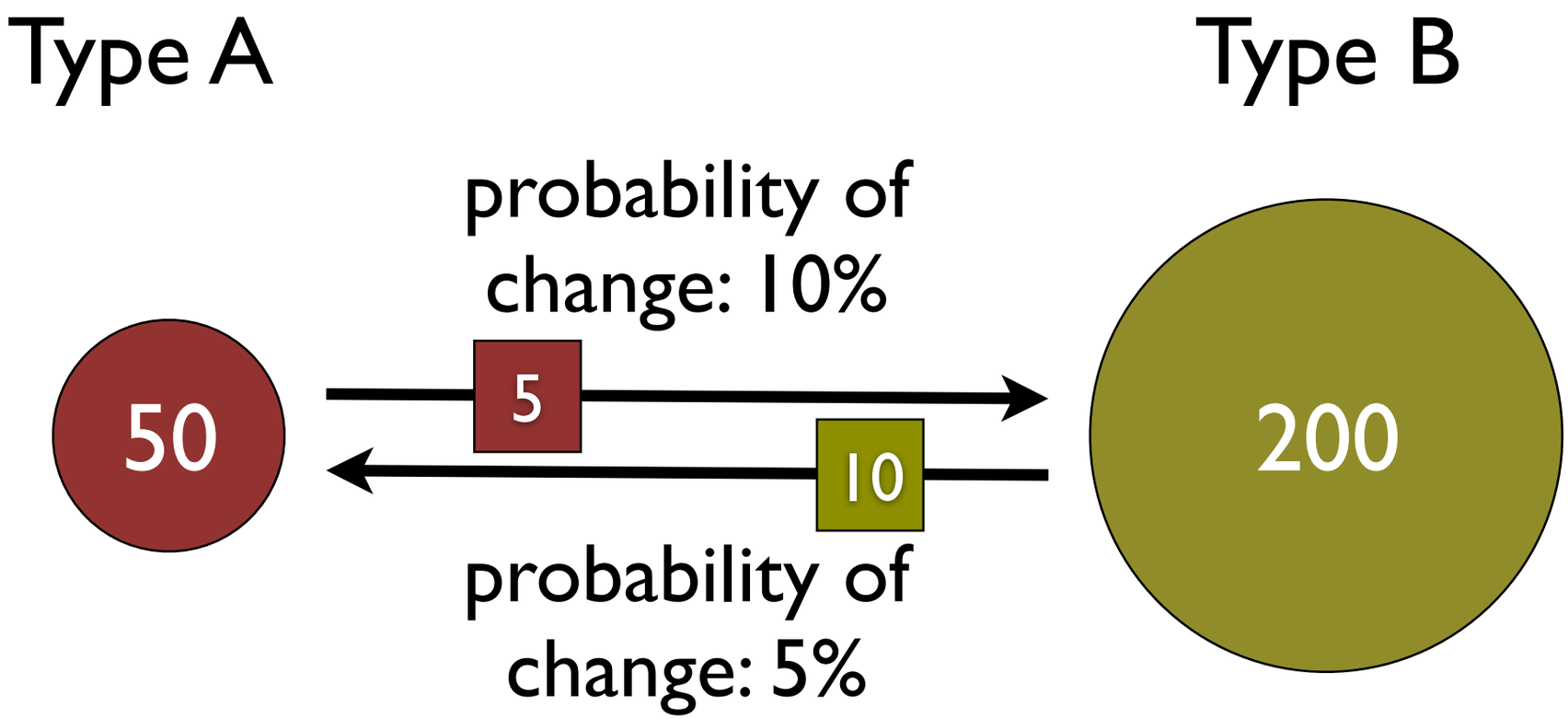

Instable distribution

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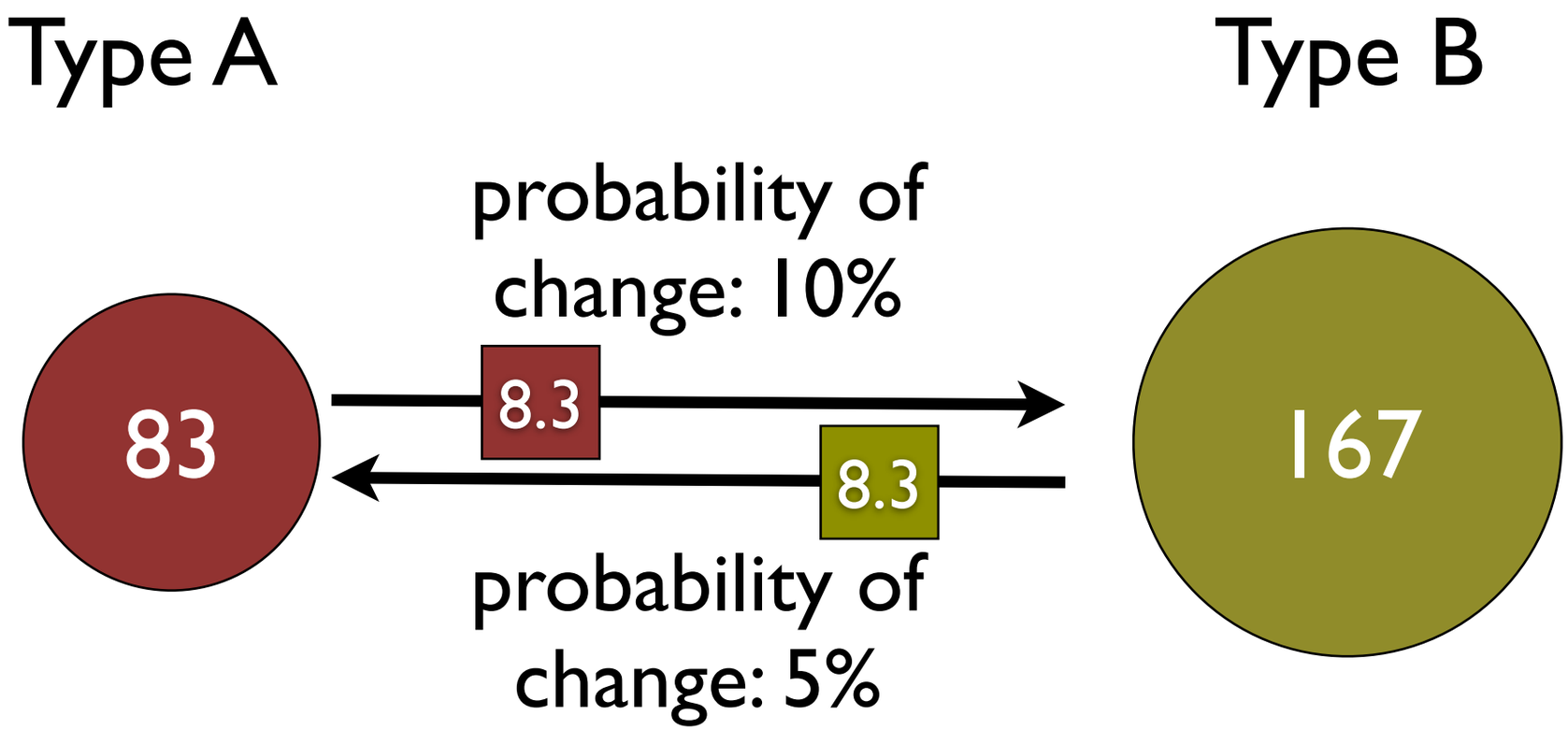

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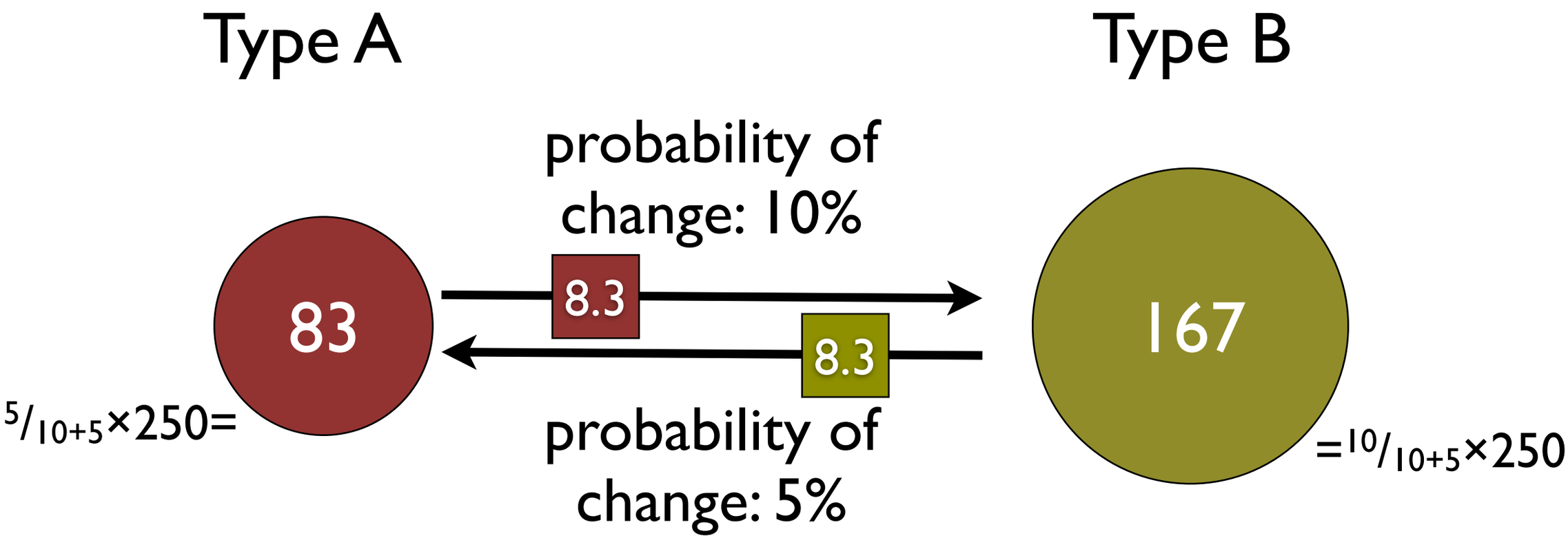

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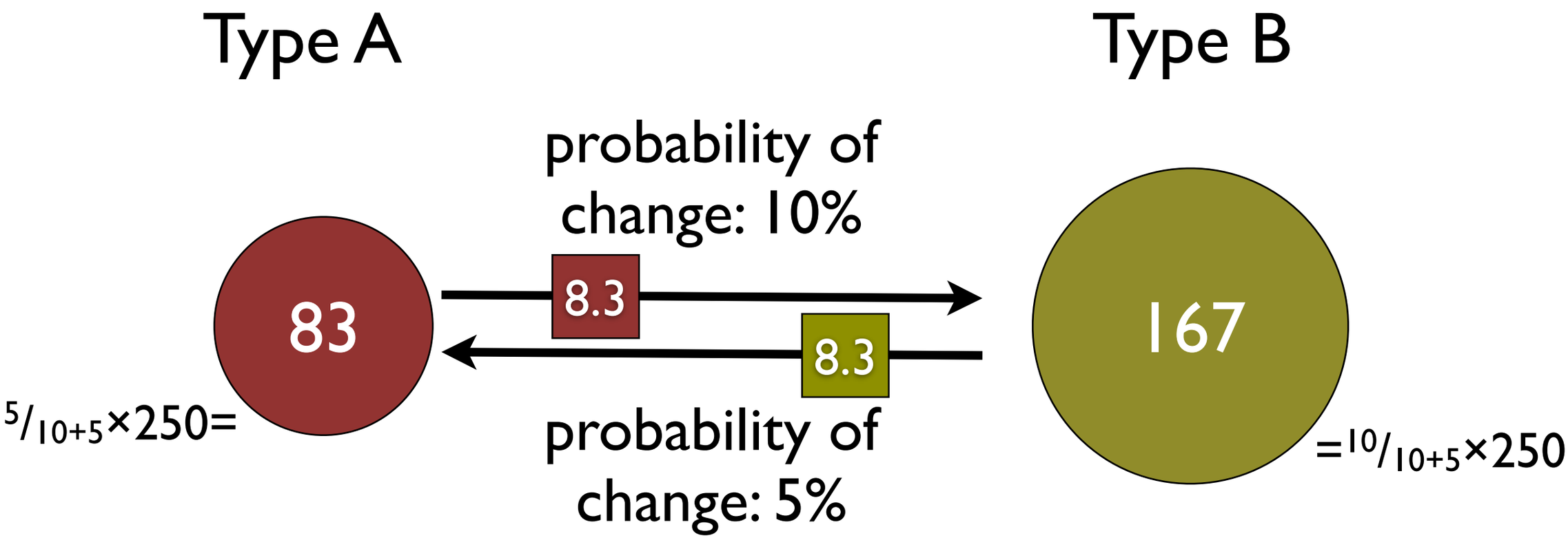

Expected stable distribution

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  - without assuming or inferring a tree: use variation among **close** languages
  - either **genealogically** close or **geographically** close

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- Two types (binary feature, A or B)
- Many pairs of closely related languages
- No assumption about proto-stage of a pair (could be either A or B)
- Eight possibilities for the development
  (A→A+A, A→A+B, A→B+A, A→B+B,
  B→A+A, B→A+B, B→B+A, B→B+B)

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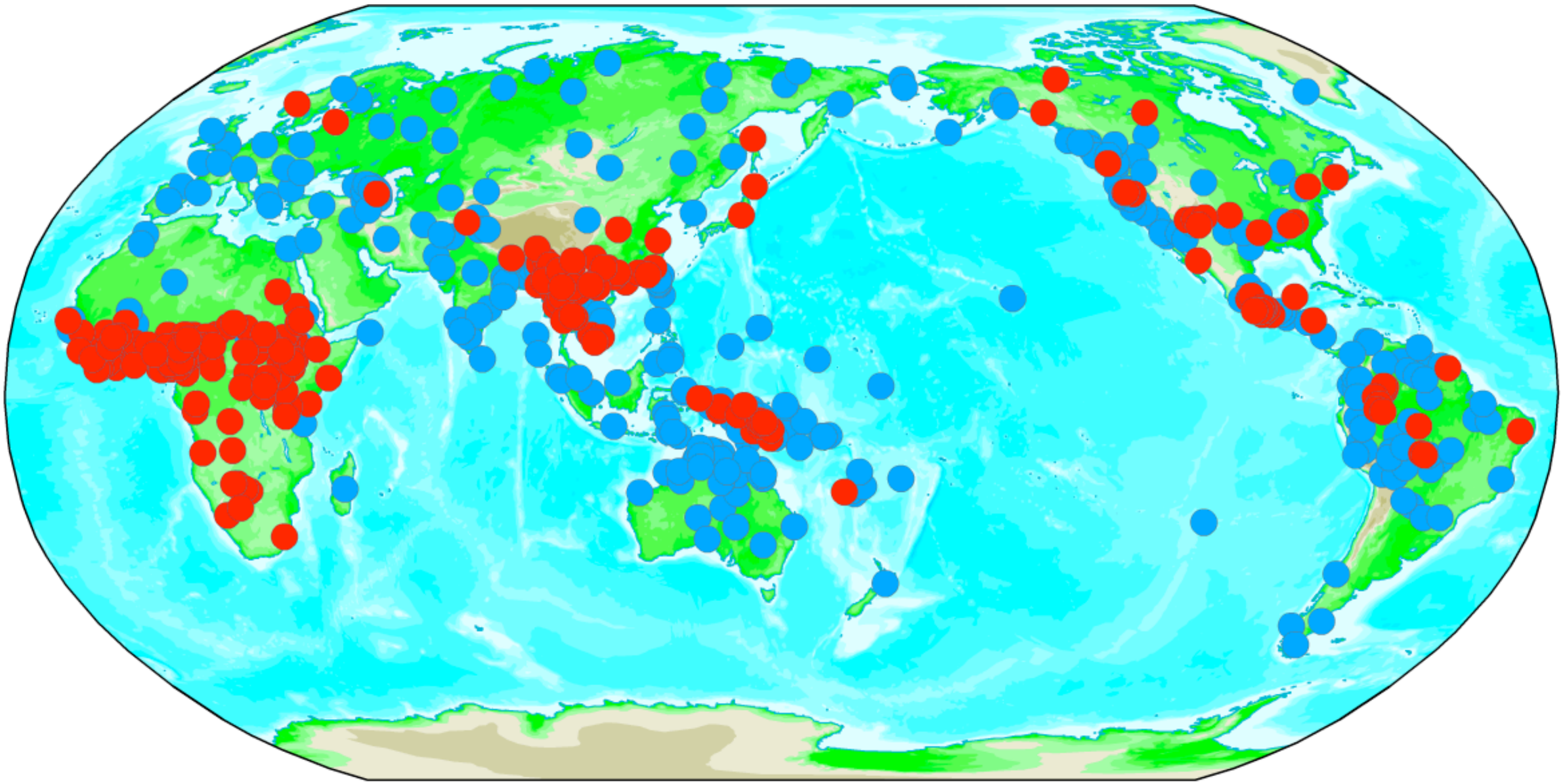
$$F(D) = F(A) \cdot 2 \cdot (p_{AB} - p_{BA}) + 2 \cdot p_{BA}(1 - p_{AB})$$

Tone vs. no tone

(tone in 41.8 % of languages)



Maddieson, Ian (2005) Tone. In: Haspelmath et al.
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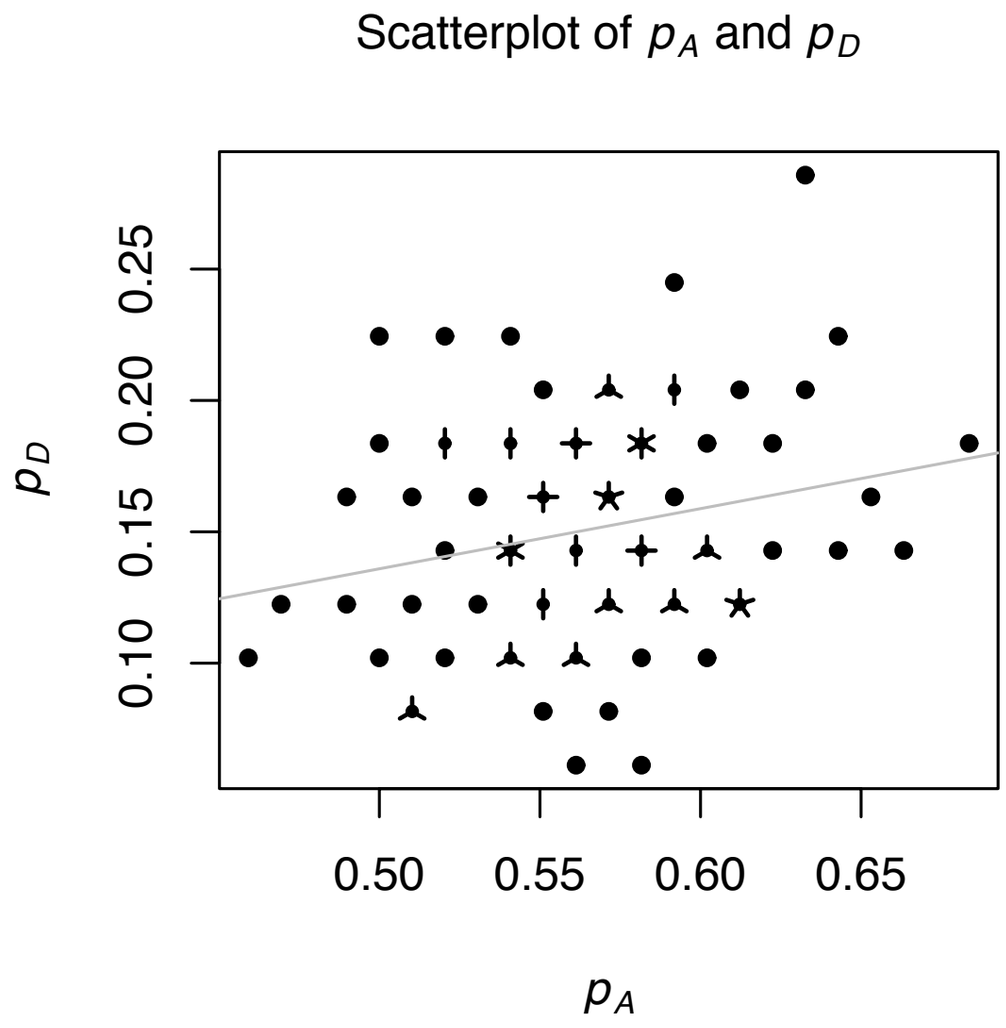
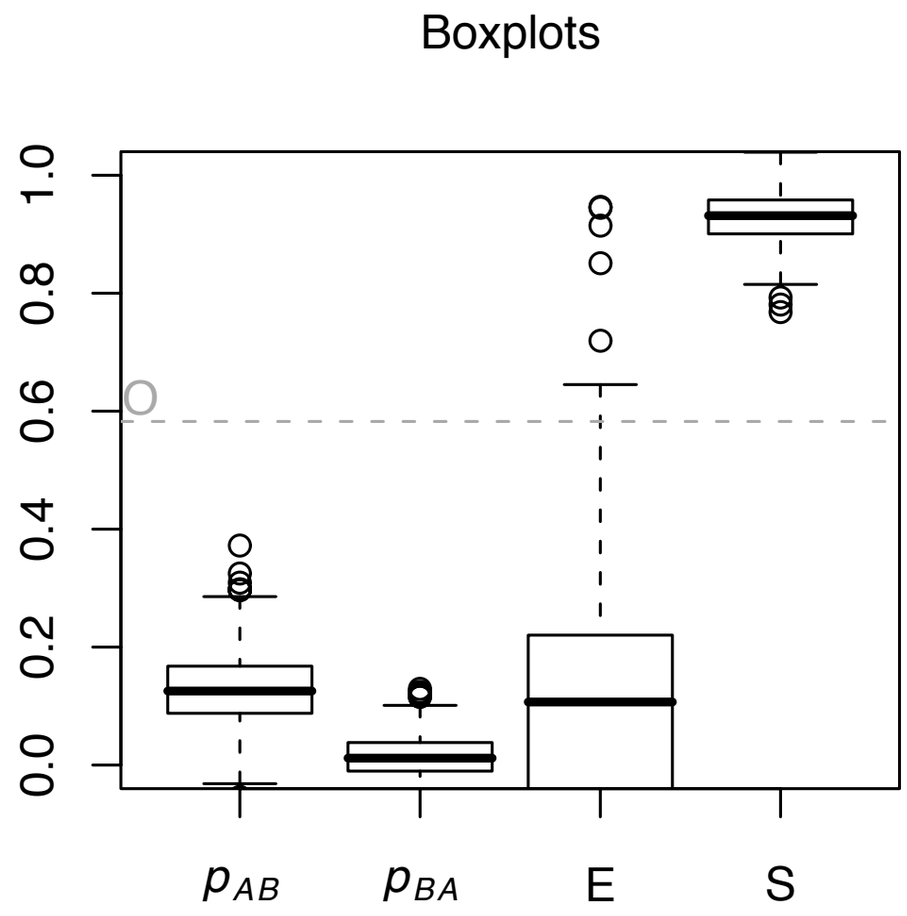
Tone vs. no tone





$p_{\text{no.tone}\rightarrow\text{tone}}$ = ???

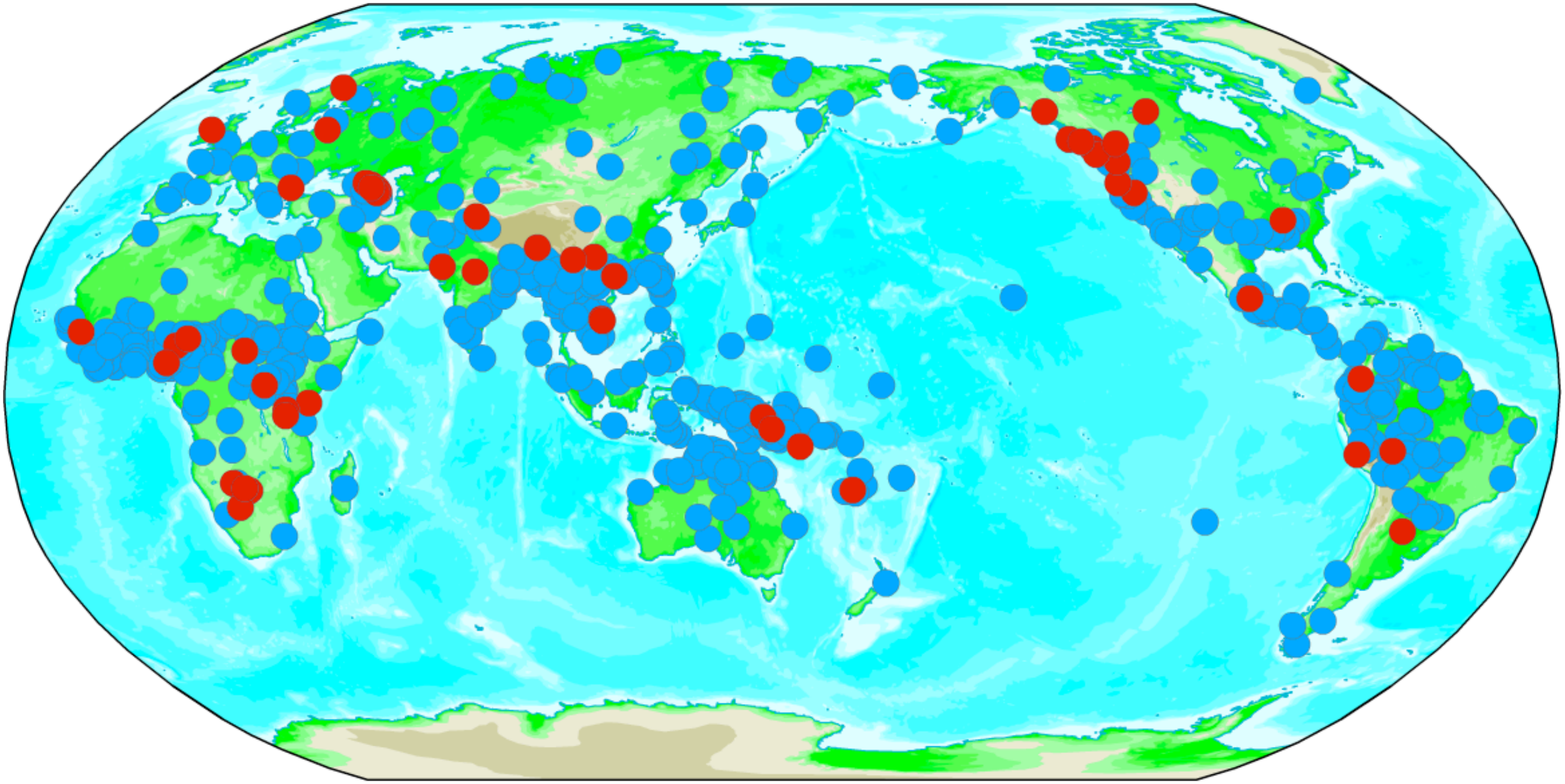
$p_{\text{tone}\rightarrow\text{no.tone}}$ = 1 %

Expected = ???

Stability = 84 %

Large consonant inventory

(9.4 % of languages)



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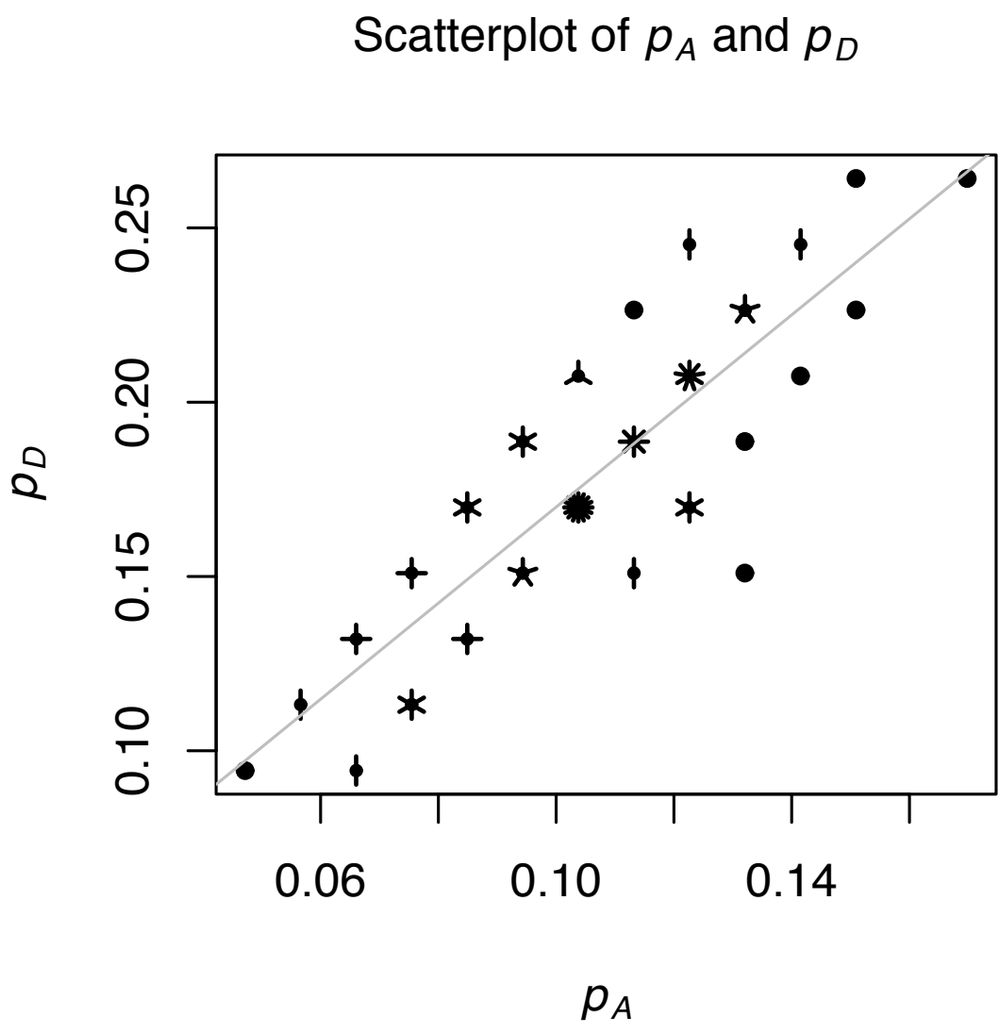

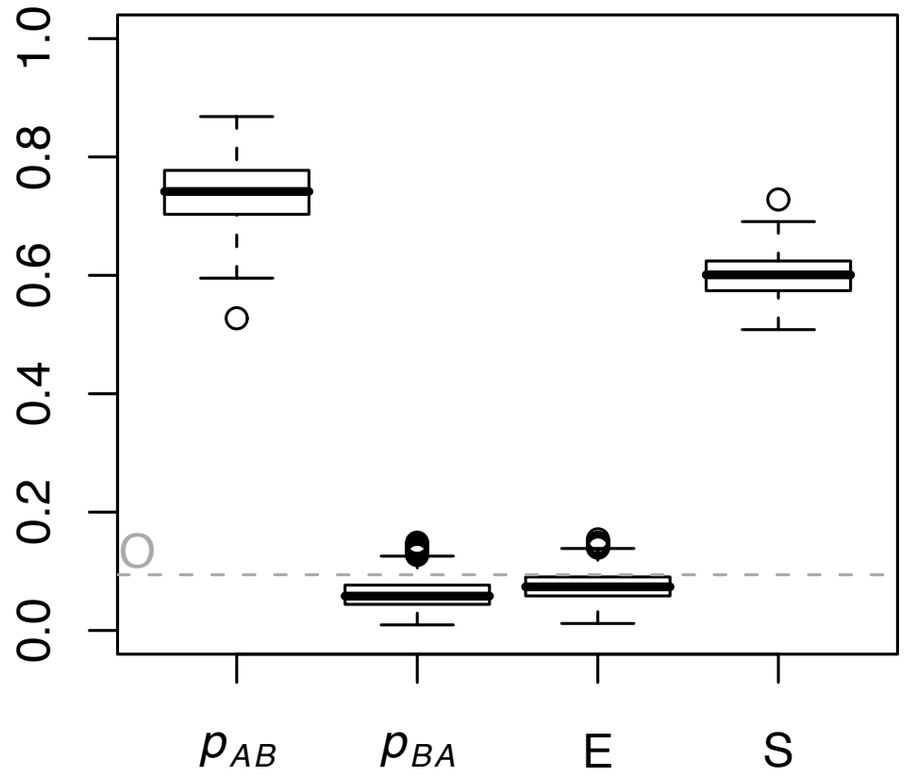

$\hat{p}$ large→non.large = 74 %

$\hat{p}$ non.large→large = 6 %

Expected = 8 %

Stability = 60 %

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- Needed is a different sampling strategy:
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  - but many languages per stratum, to investigate internal diversity
- Ideally, much more quantitative information about internal variation of language families is needed