Areas and Universals:
Using the *World Atlas of Language Structures*

Michael Cysouw
Max Planck Institute for Evolutionary Anthropology, Leipzig

Or:

Michael Cysouw

Max Planck Institute for Evolutionary Anthropology, Leipzig

Or:

Against *"unbiased"* sampling

Michael Cysouw

Max Planck Institute for Evolutionary Anthropology, Leipzig

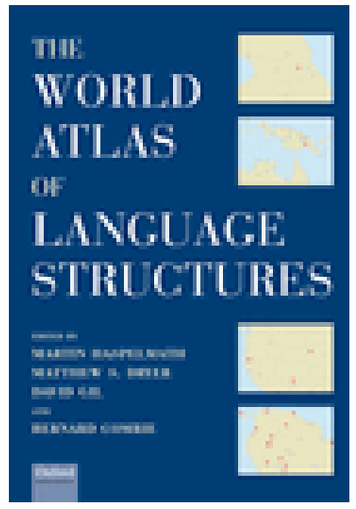
Or:

What you see is ***not*** what you get

Michael Cysouw

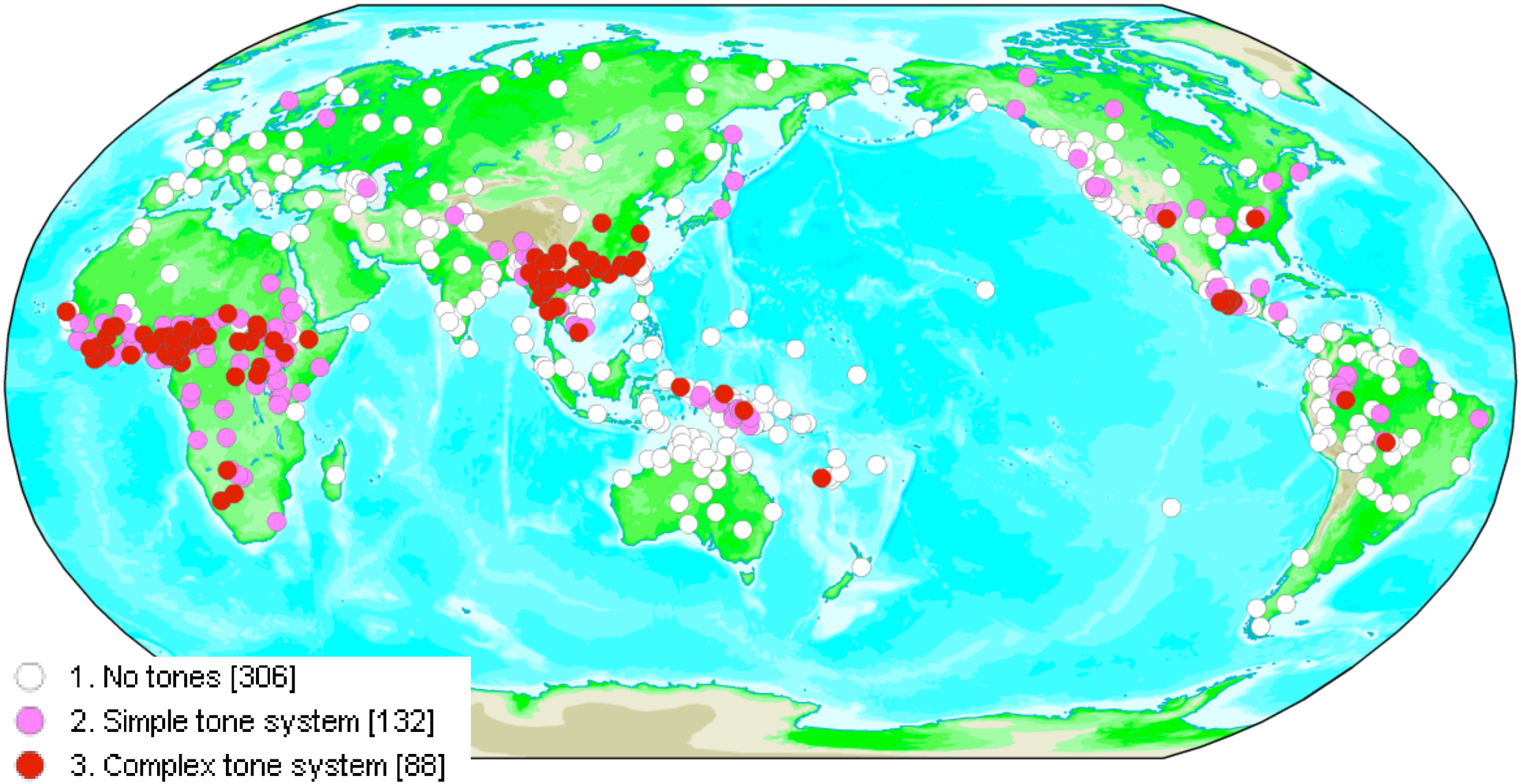
Max Planck Institute for Evolutionary Anthropology, Leipzig

Introducing
The World Atlas of Language Structures

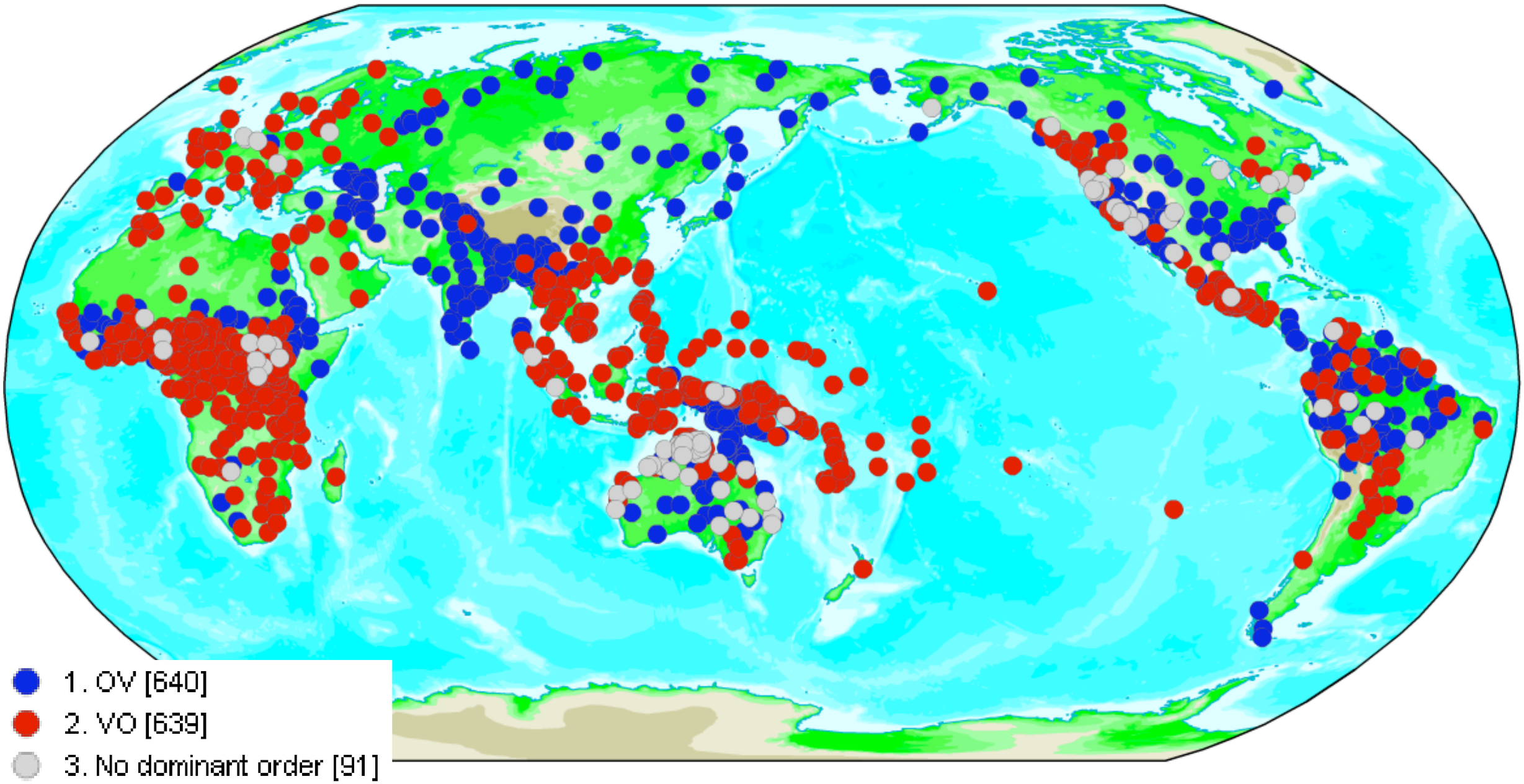


- A printed atlas with 142 world maps showing the areal distribution of structural characteristics
- On the maps, between 120 and 1,100 languages are shown
- In total, information is available for 2,500 languages
- In total, there are almost 60,000 datapoints

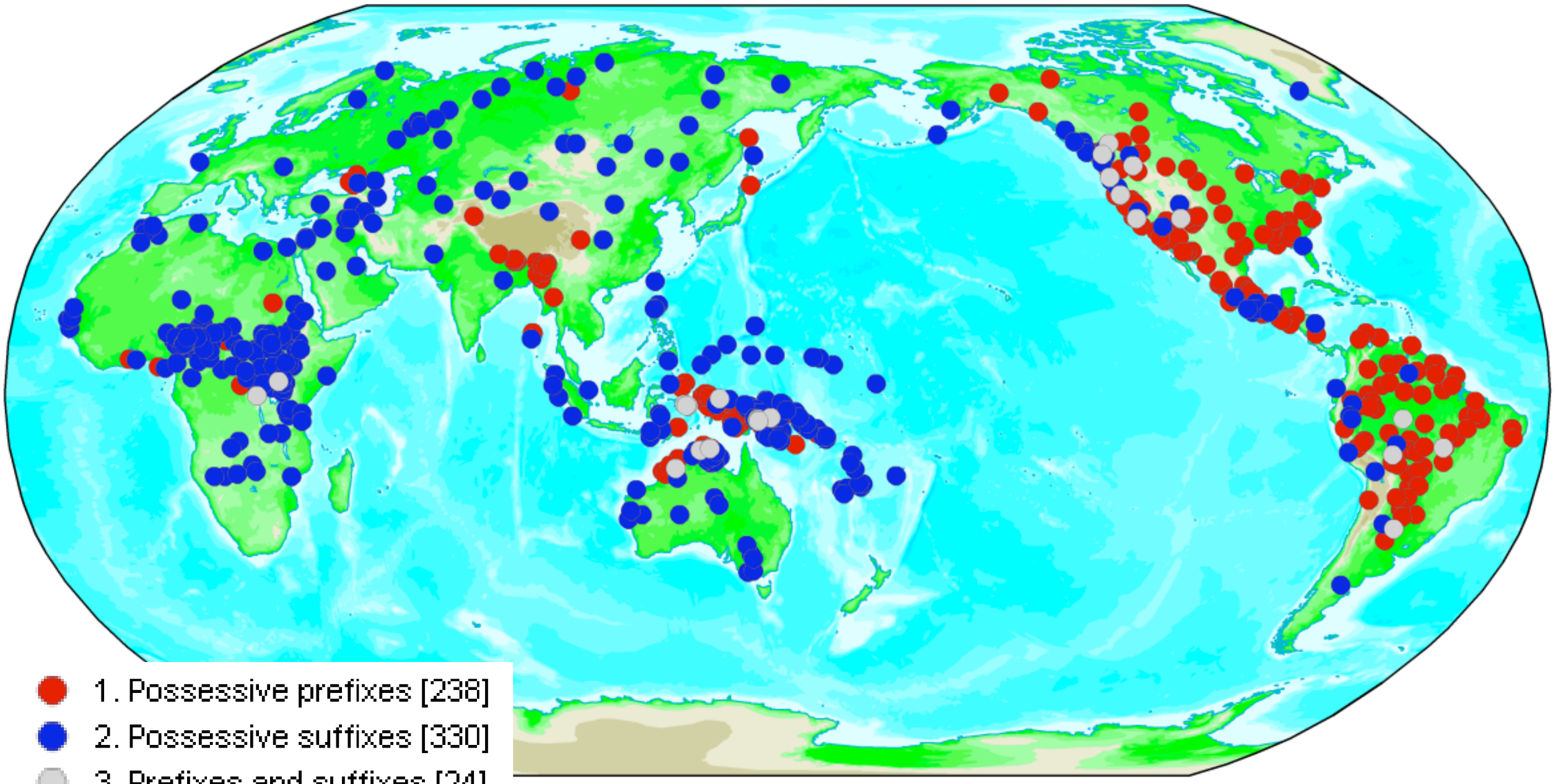
Tone
(Ian Maddieson)



Order of Object and Verb (Mathew Dryer)



Position of pronominal possessive affixes (Mathew Dryer)



Reactions to *Large Areal Consistencies*

- Matthew Dryer (starting from 1989):

  Problem for universals !

- Johanna Nichols (starting from 1992):

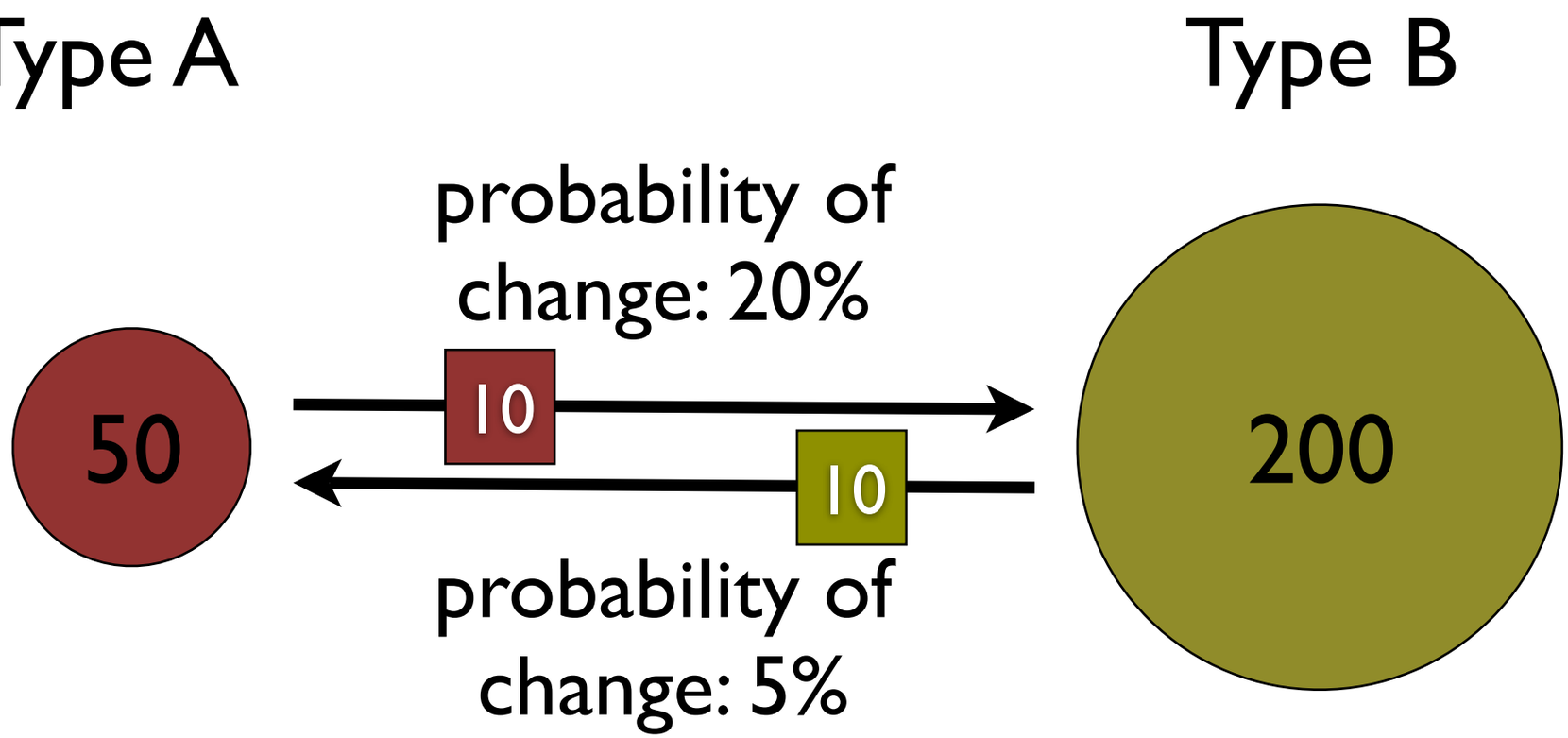
  Great for investigation of history !

- Elena Maslova (starting from 2001):

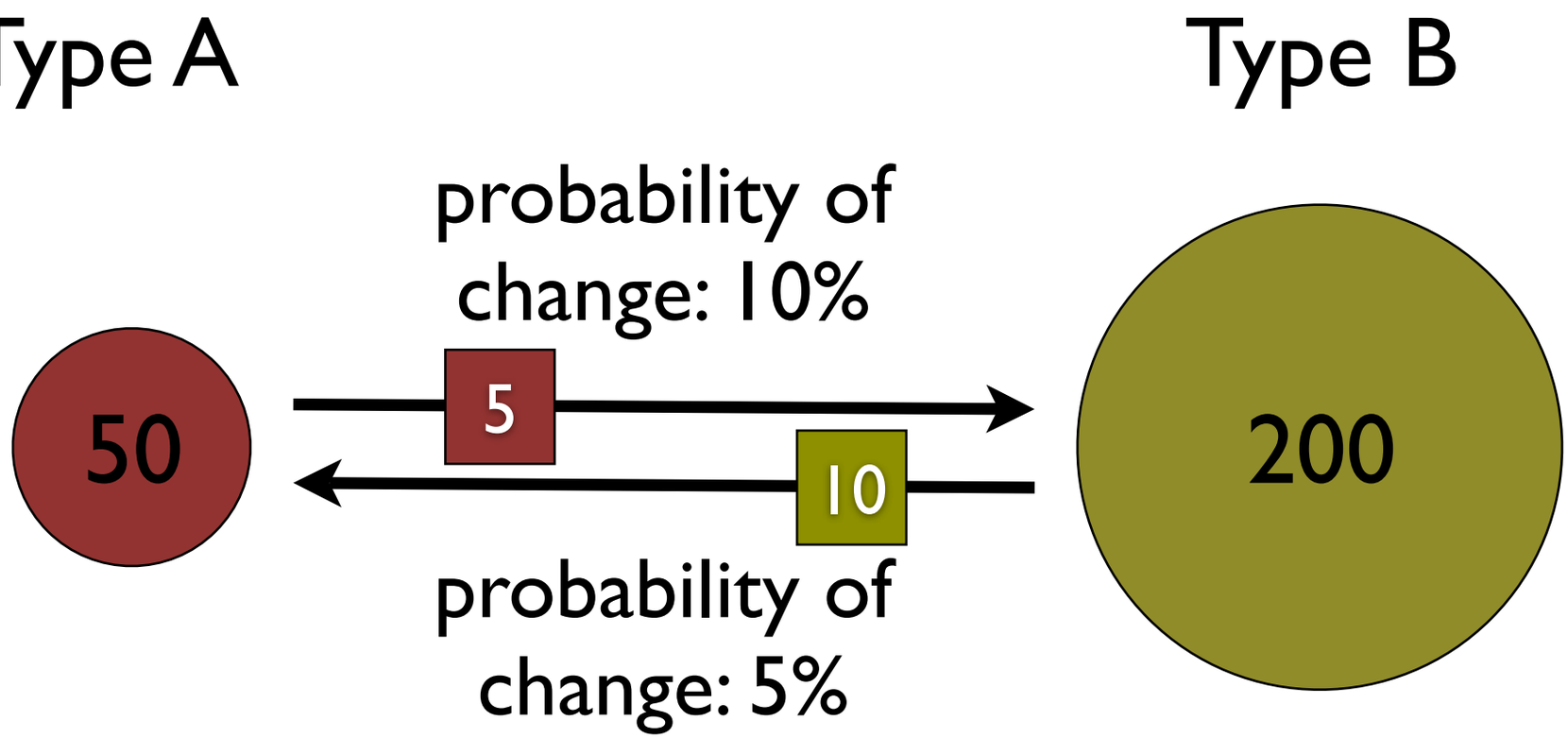
  How strong is the historical influence ?

Dynamic Typology

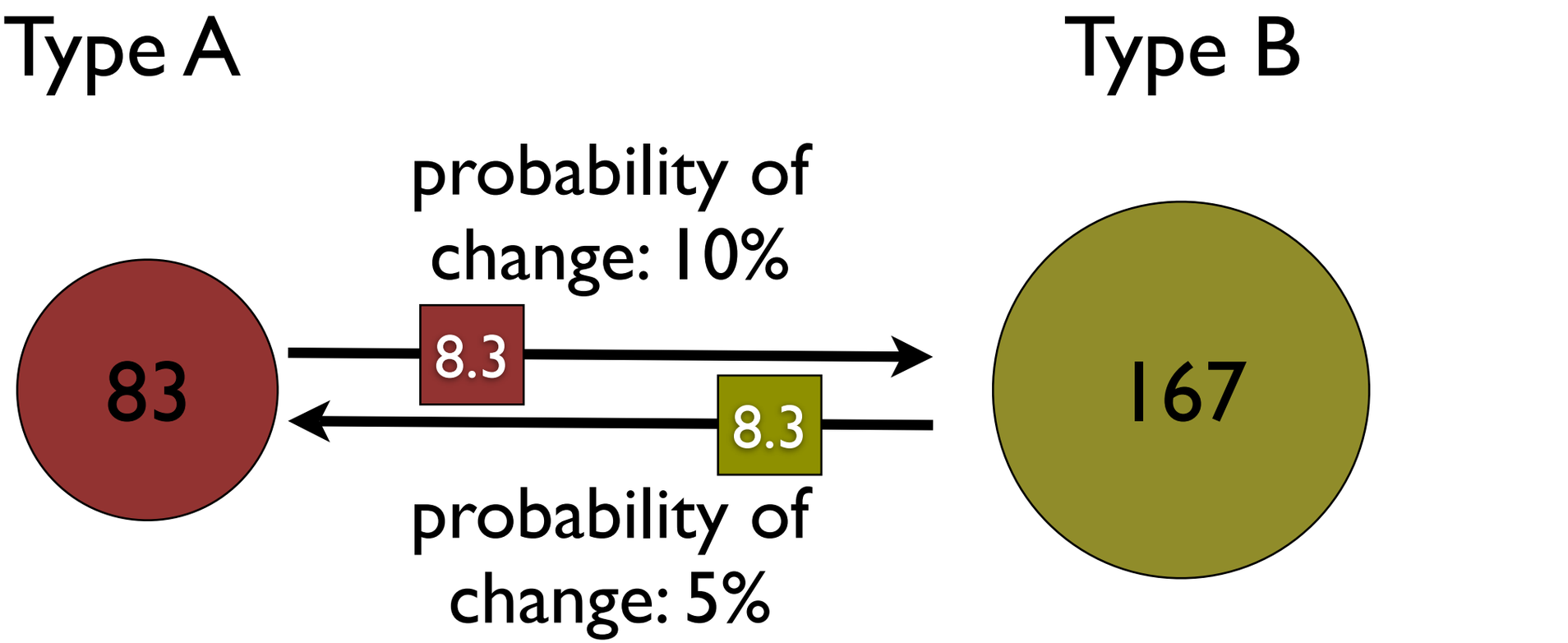
- It is not the actual frequencies that matter
- It is the stable distribution that matters
  - A stable distribution is a situation in which just as many languages change from A to B as change from B to A.
  - The extent to which the actual is different from the stable situation signals an effect of history



Stable distribution



Instable distribution



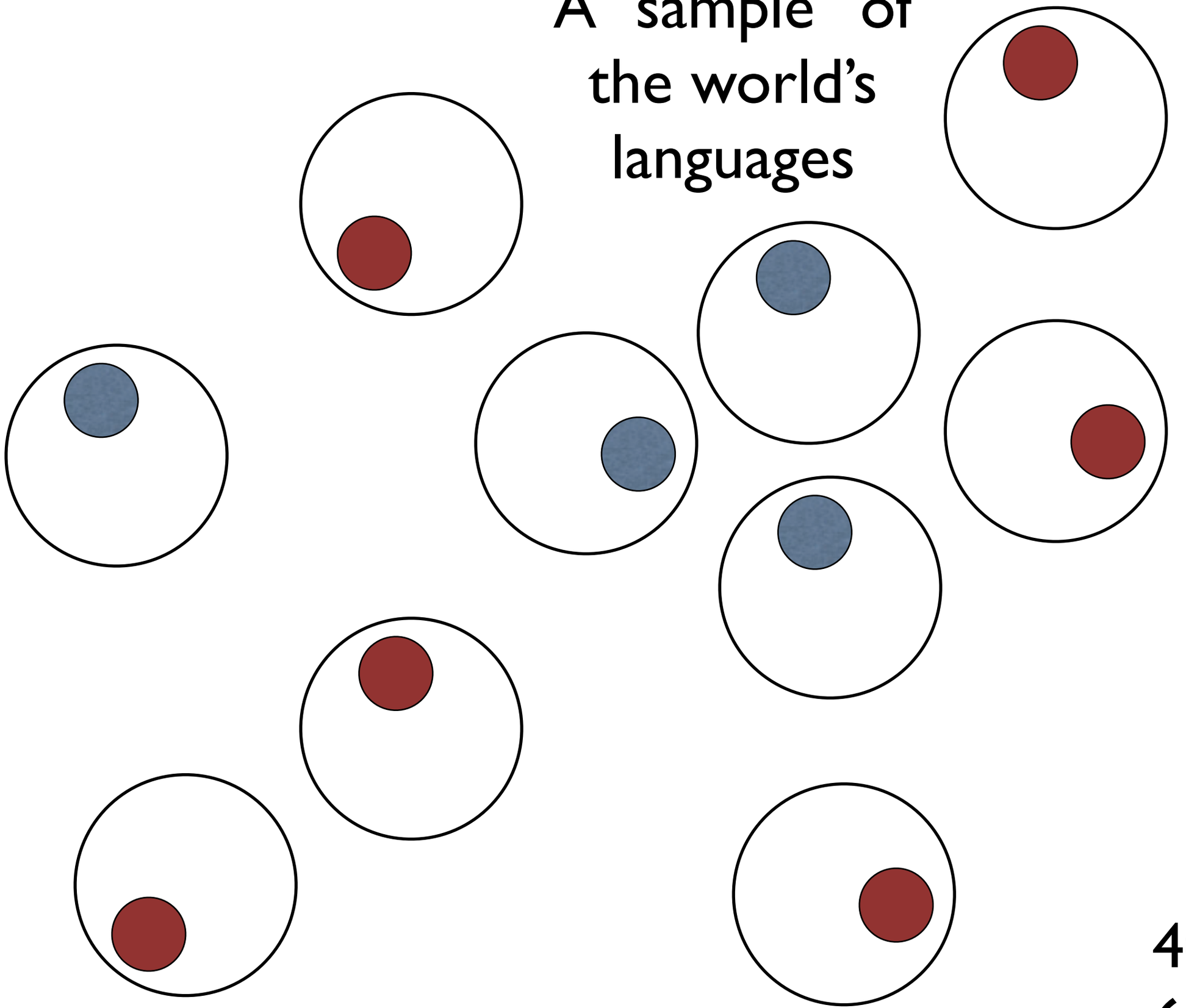
Expected stable distribution

Estimating Transition Probabilities

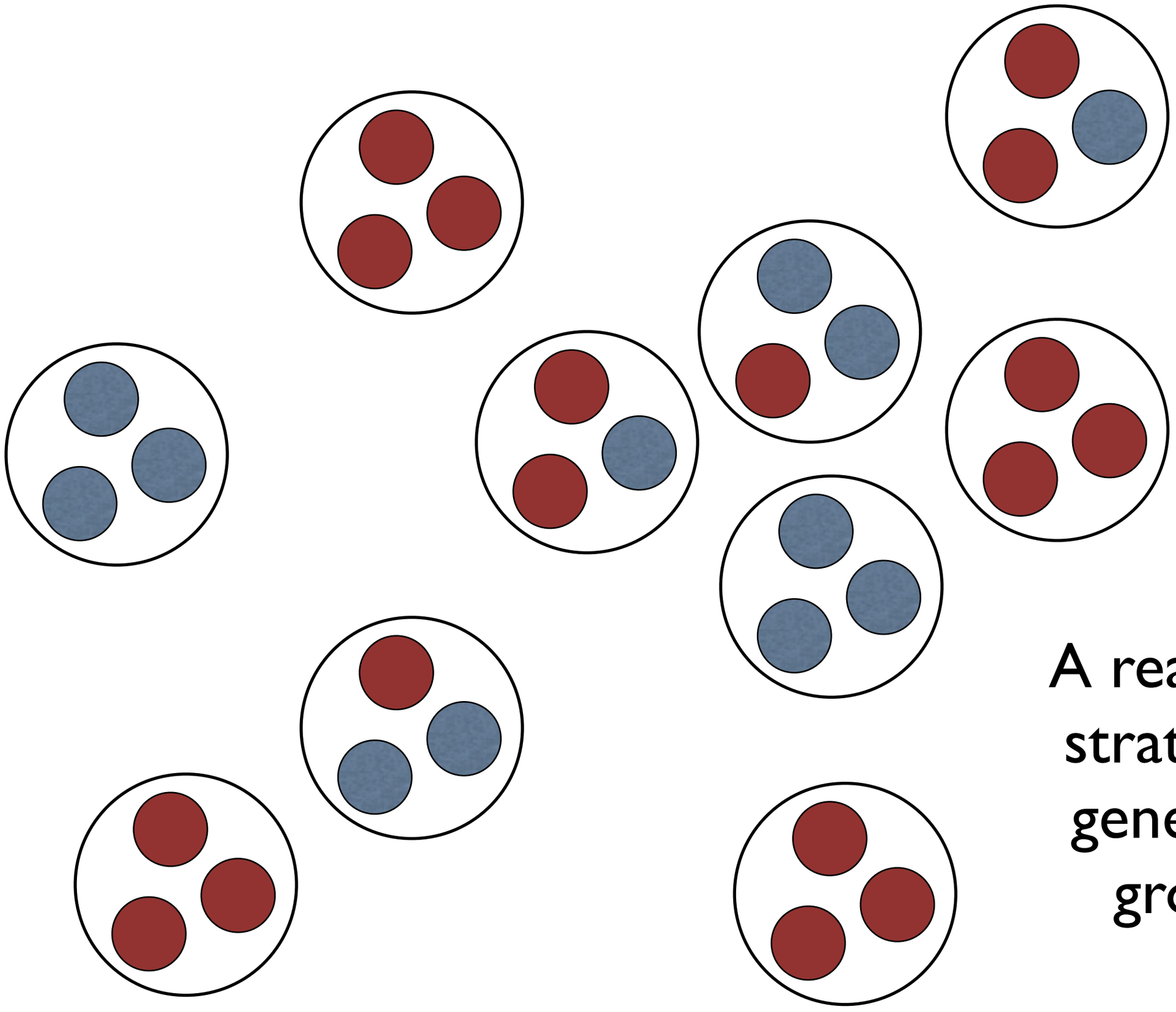
- Are transitions probabilities measurable at all ?
- If yes: use group internal variation of many groups
- Instead of taking 100 genealogically unrelated languages, take 25 groups of four closely related languages

The world's genera

A "sample" of the world's languages

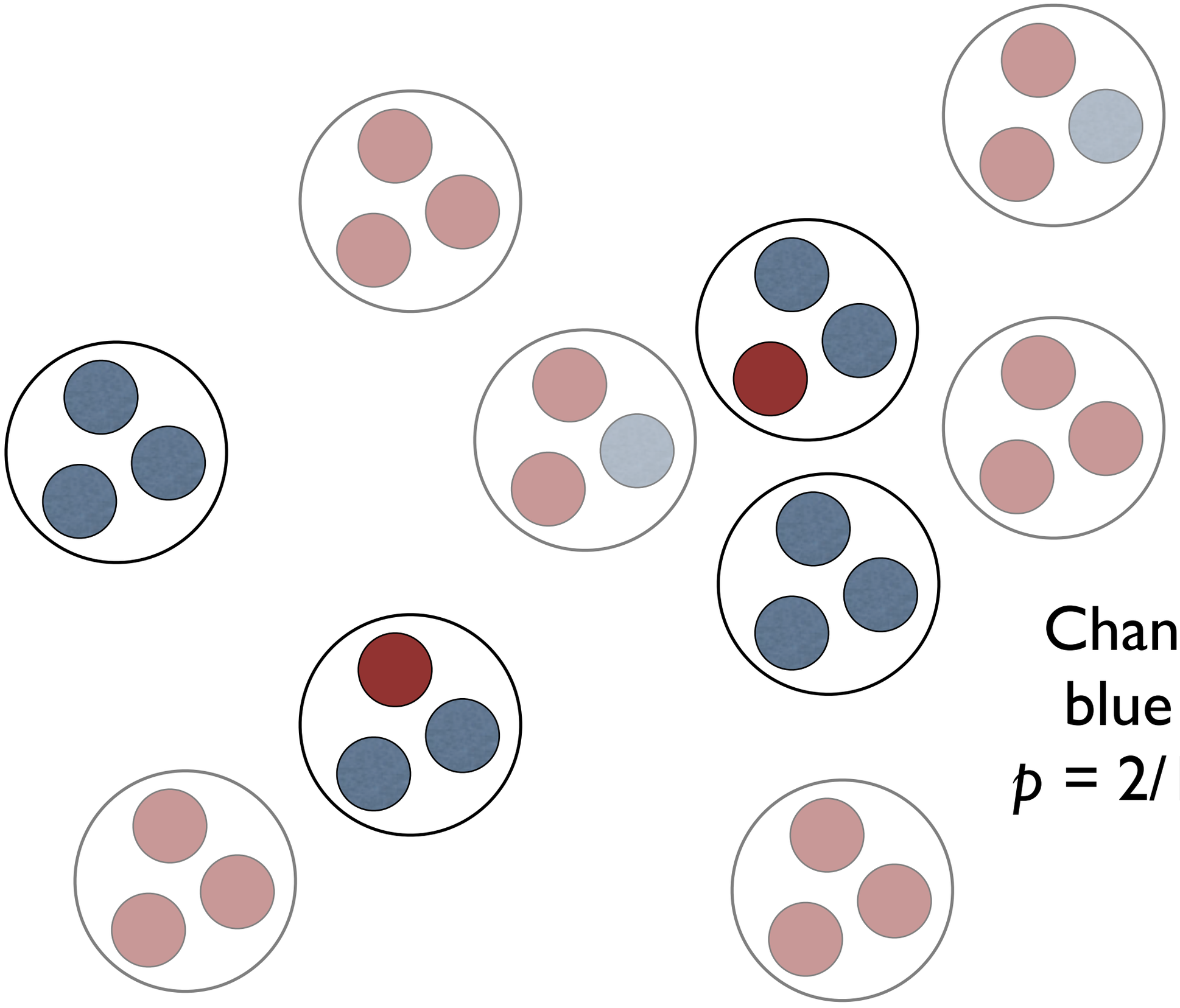


40% blue
60% red

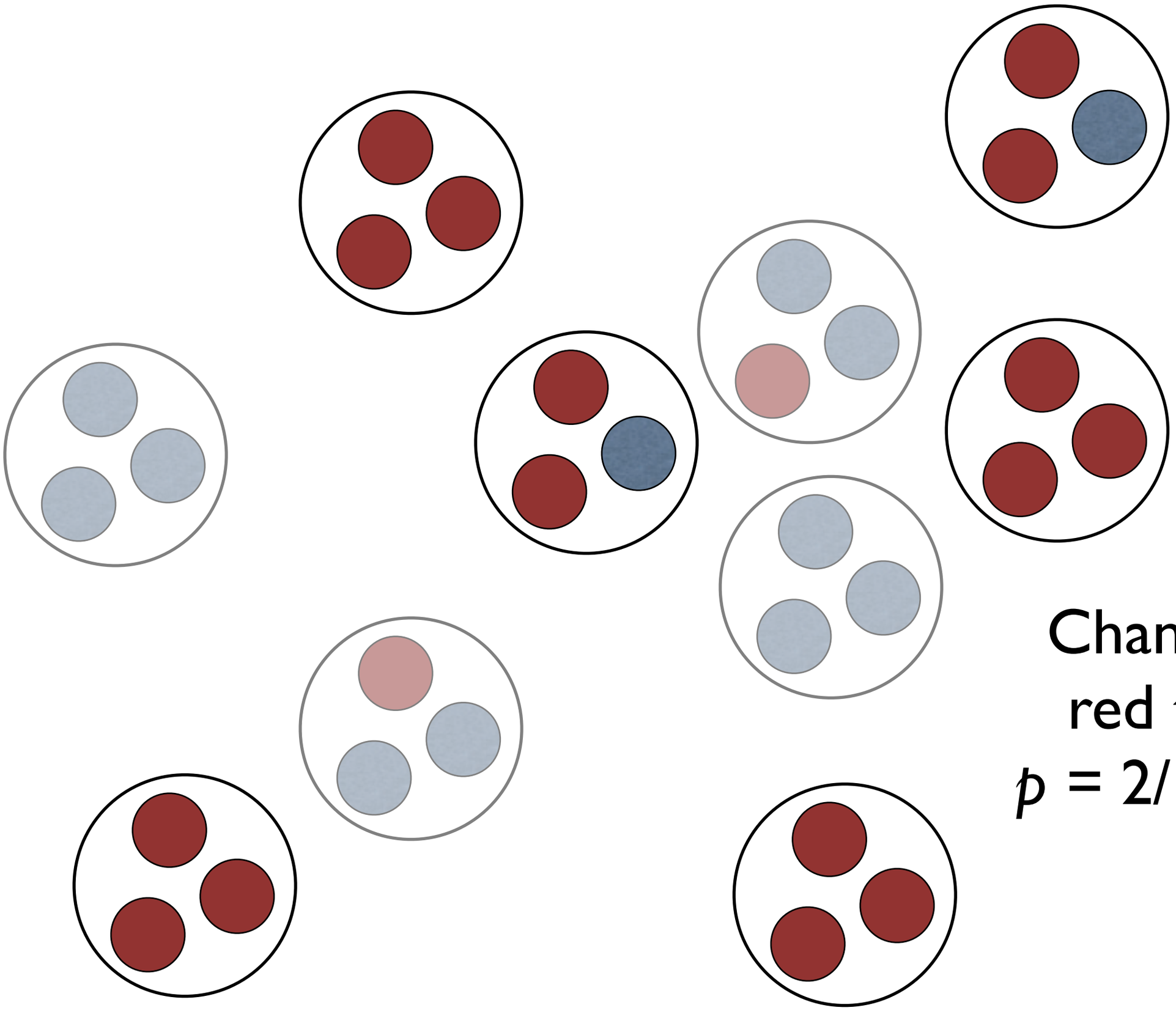


A real sample stratified for genealogical grouping

How to get probabilities of change ...

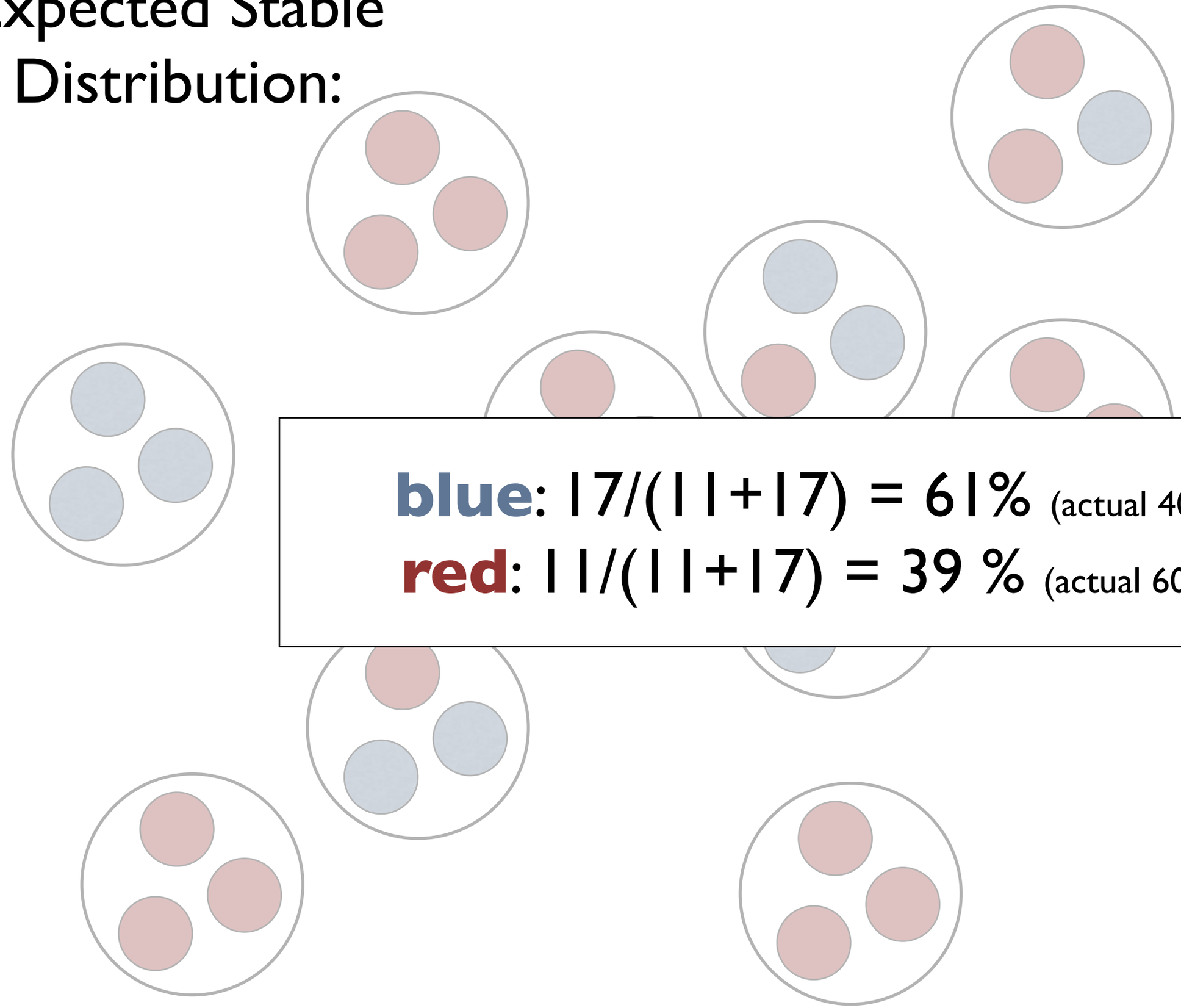


Change from blue to red:
p = 2/12 = 17%



Change from red to blue:
p = 2/18 = 11%

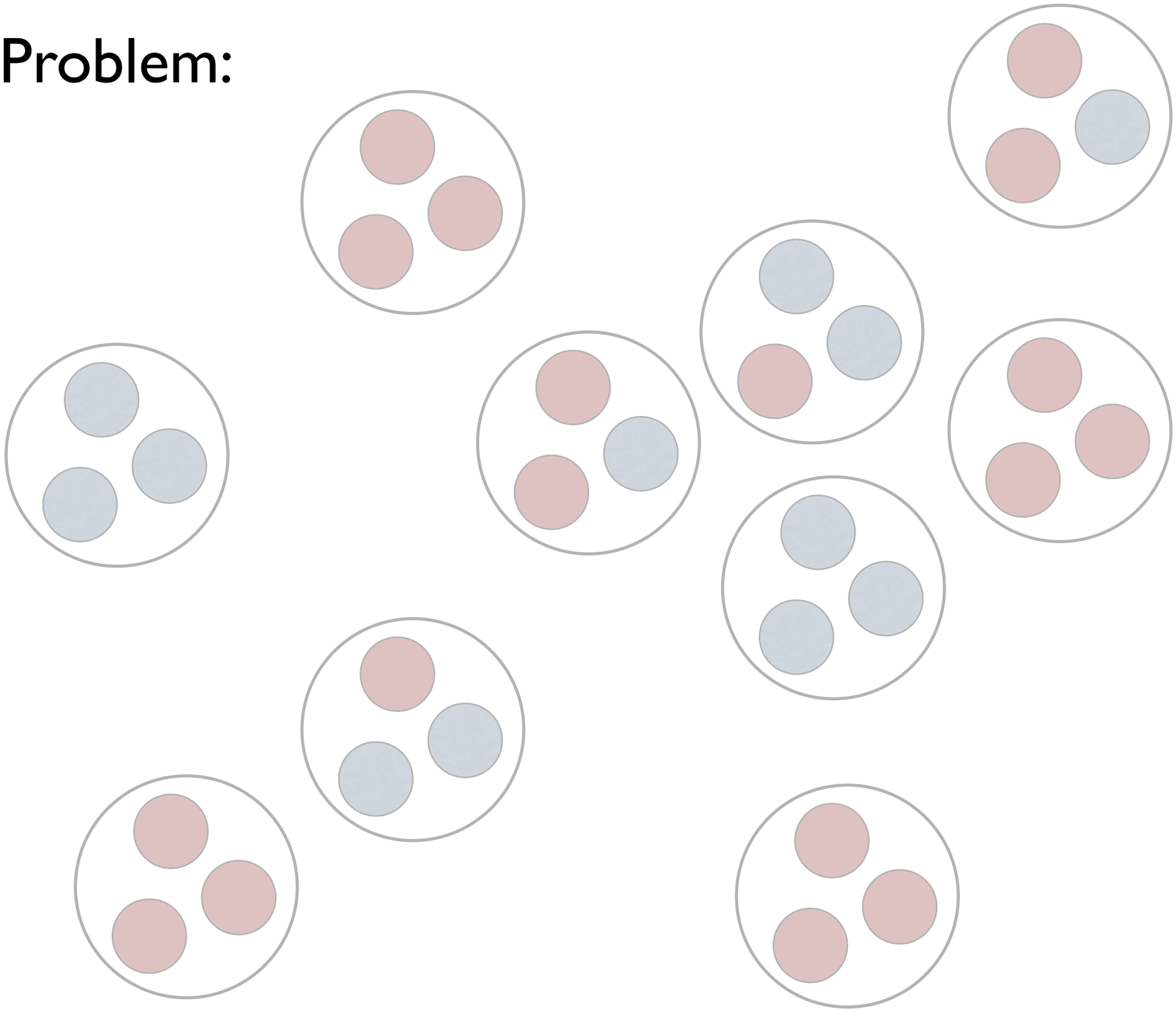
Expected Stable Distribution:



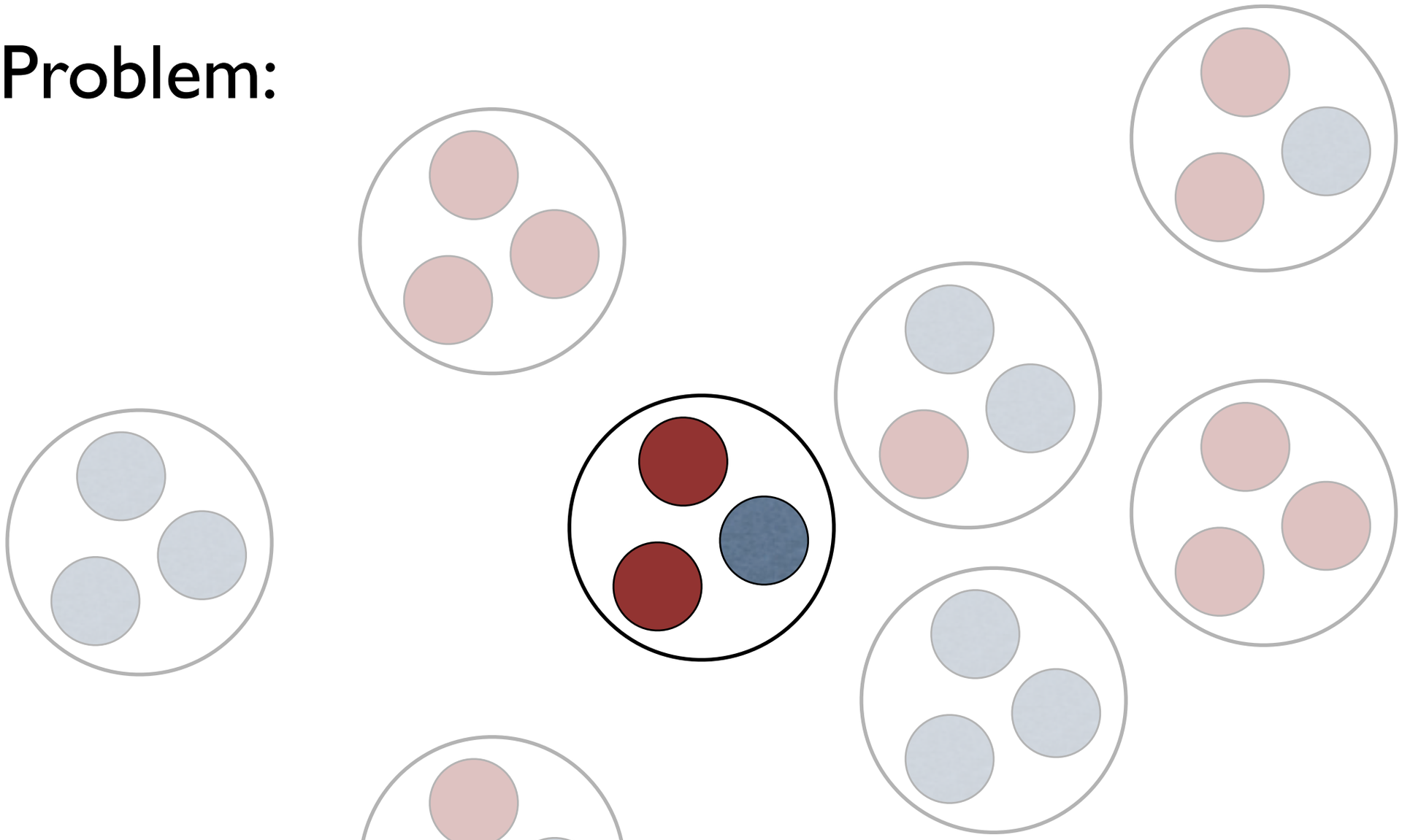
blue: 17/(11+17) = 61% (actual 40 %)

red: 11/(11+17) = 39 % (actual 60 %)

Problem:



Problem:



- Originally **red** with one change to blue ?
- Originally **blue** with two changes to red ?

Elena Maslova's breakthrough

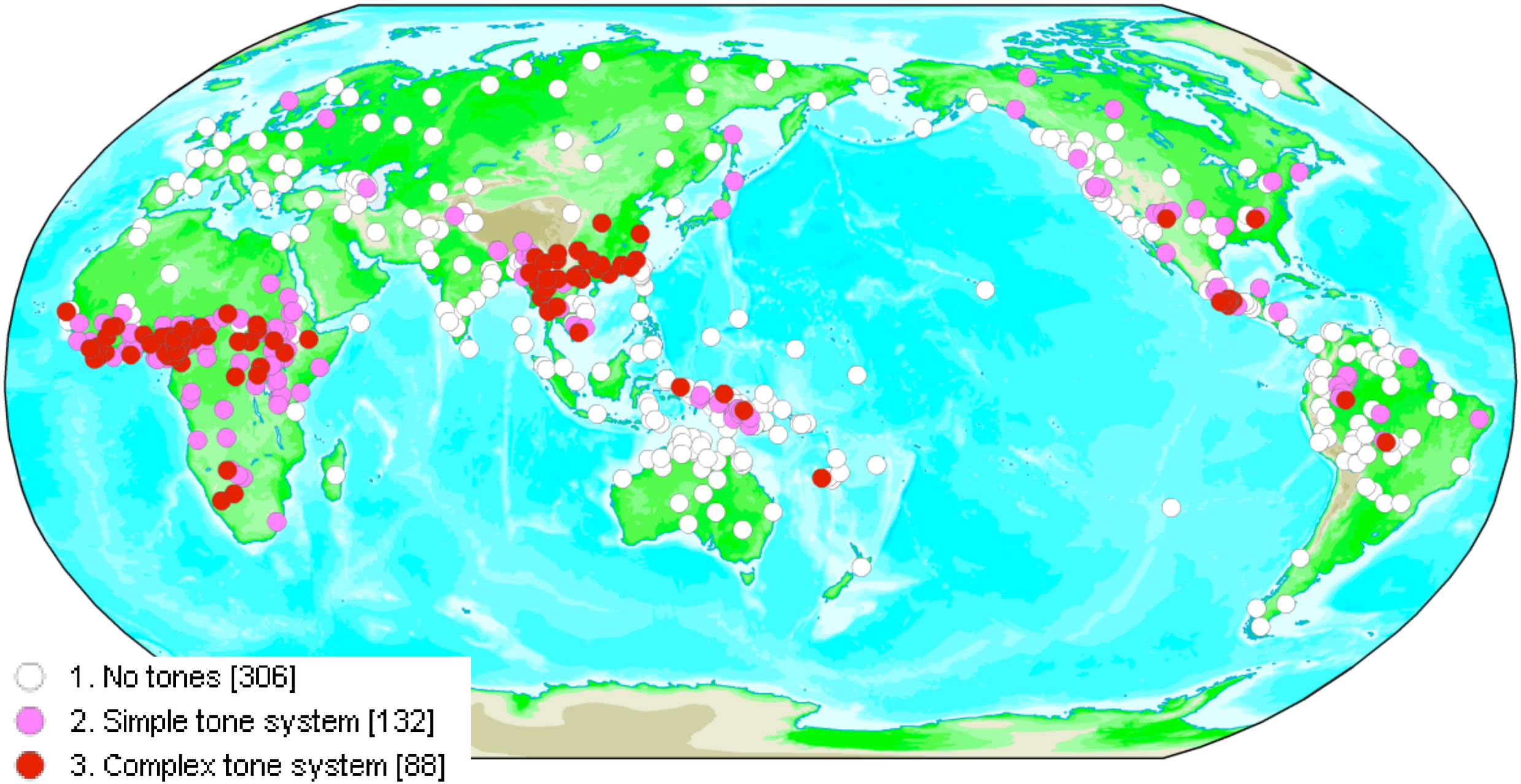
probability of **any** change happening $= \alpha \cdot \text{frequency (blue)} + \beta$

For groups of three languages:

$\alpha = 3 \cdot (p_{\text{blue}\to\text{red}} - p_{\text{red}\to\text{blue}})$

$\beta = 3 \cdot p_{\text{red}\to\text{blue}} \cdot (1 - p_{\text{blue}\to\text{red}})$

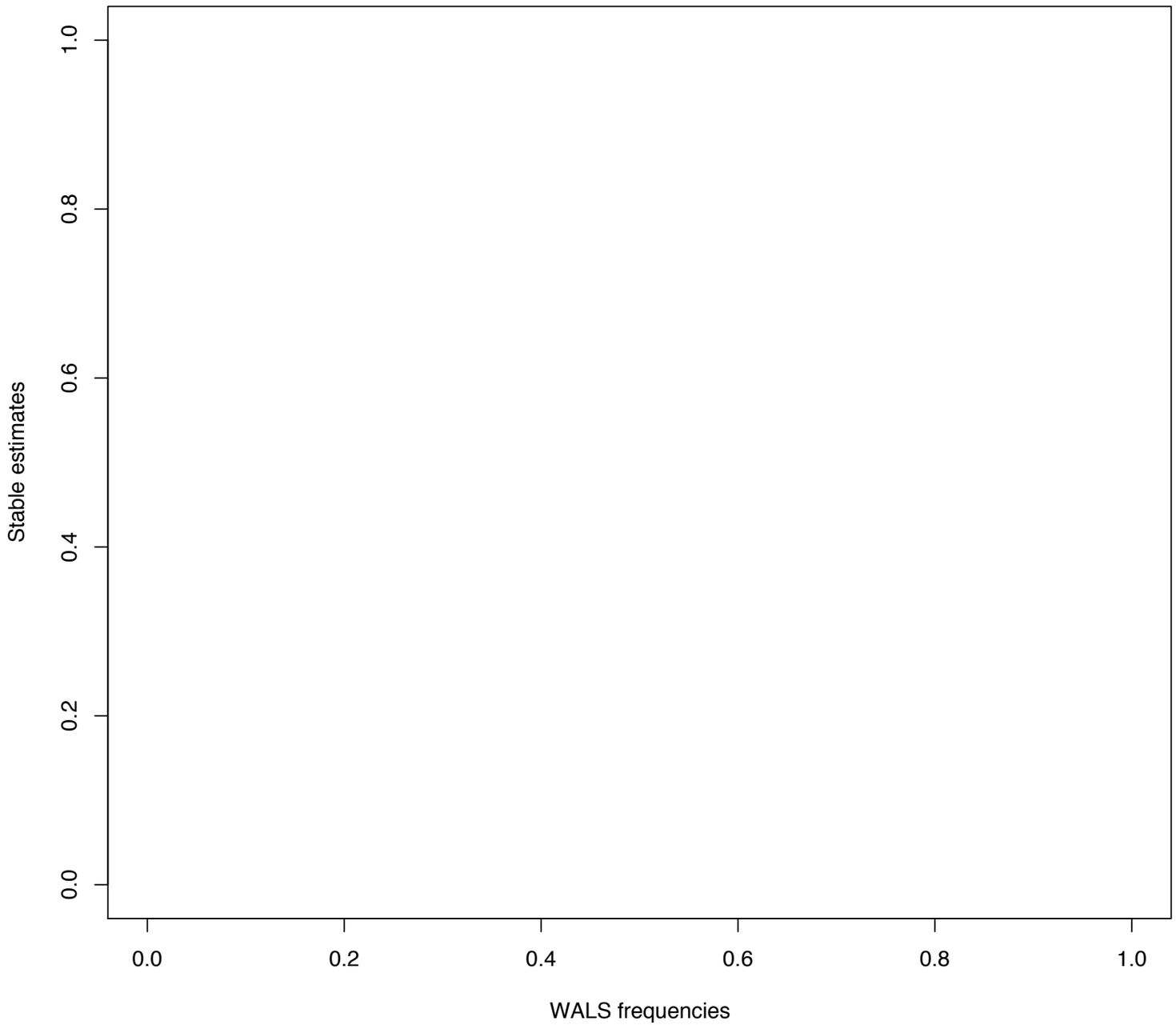
Tone
(Ian Maddieson)



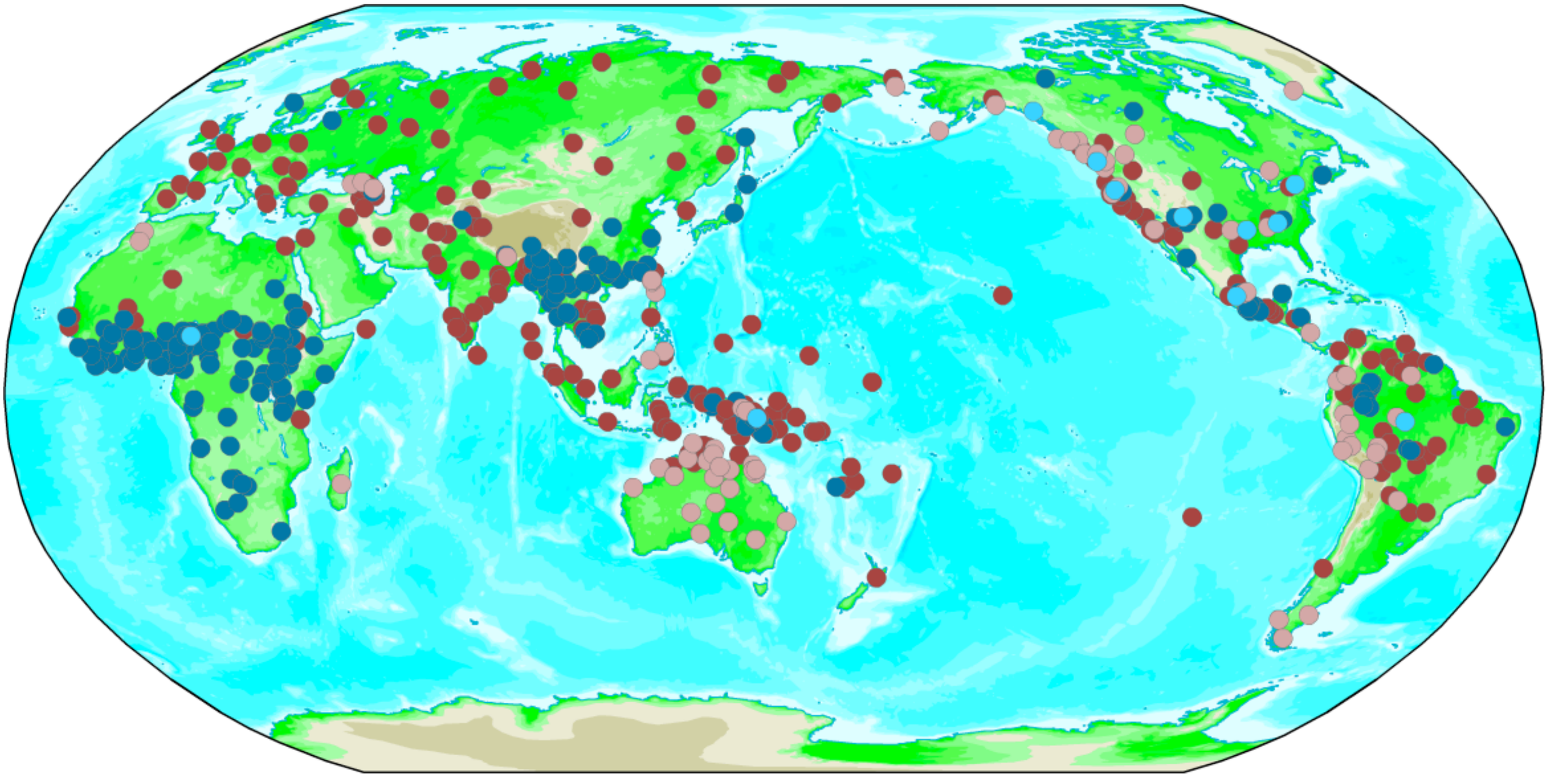
Stable or not ?

	WALS frequency	Normalised frequency	Expected stable distribution
No tones	306 (58 %)	59 %	29 %
Simple tone system	132 (25 %)	27 %	21 %
Complex tone system	88 (17 %)	14 %	42 %

All characteristics in WALS



Cross-section of tone and vowel inventory (Ian Maddieson)



Traditional Typological Interpretation

	No tone	Tone
Few vowels (<5)	75	11
Many vowels (≥5)	231	206

Tone → Many vowels

Few vowels → No tone

Statistical Interpretation

	No tone	Tone
Few vowels (<5)	75 (+25)	11 (-25)
Many vowels (≥5)	231 (-25)	206 (+25)

Fisher's Exact $p = 7 \cdot 10^{-10}$

Tone ~ Many vowels

Dryer's (1992) test

	Africa	Eurasia	SE Asia & Oceania	N. Guinea & Australia	North America	South America
Tone & Large	109	7	41	14	21	14
Tone & Small	1	0	0	1	8	1
No Tone & Large	14	73	44	33	32	35
No Tone & Small	2	3	7	25	21	17
p	.042	n.s.	.016	.013	n.s.	.053

Expected Stable Distribution

Stable	No tone	Tone
Few vowels (<5)	74	66
Many vowels (≥5)	132	206

Fisher's Exact p = .83

Conclusions

- Actual frequencies can be deceptive
- Expected stable frequencies can be estimated
- We need real samples for this
  (i.e. more than one language per group)

MAX-PLANCK-GESELLSCHAFT