A Bottom Up Approach to Language Evolution

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Is bilingualism a puzzle for evolutionary linguistics?  Were early human communities bilingual?  Why is there so much linguistic diversity?

Is there an evolutionary explanation for the ability to learn two languages simultaneously?

Different approaches lead to different conclusions.  Top down models bias researchers towards assuming an innate “bilingual ability”.  A bottom up approach shows that the questions above are not valid.  A general ability to condition linguistic variation on semantic variables, plus dynamic social structures, leads to the emergence of bilingualism.

Top down
When is bilingualism a rational expectation?

Rational prior expectation for the number of languages in the input

Monolithic, static languages
Languages are represented as discrete, holistic entities whose contents don’t evolve

Fixed social structures
Social structures are very simple or manipulated once.  Changing the social structure changes the rational expectations in a top-down model.

Bottom up
How do social structures and variation co-evolve?

Continuous linguistic features
There is no evolutionarily valid way to partition variation into languages.  In the real world, languages are defined by social structure, politics, history, geography and identity.

Utterances tied to speakers
Each speaker produces a certain amount of linguistic variation.  Speakers share different amounts of variation.

Dynamic social structures
Variation is meaningful

A bottom up model of the Evolution of Linguistic Diversity

General learning mechanism
Individuals learn by conditioning linguistic variation on continuous semantic variables.  Speaker identity is a possible conditioning variable.  If speaker identity is an important factor, then bilingualism will emerge.

Dynamic Social Structures
Each individual is assigned to a community
Each community has a probability of receiving utterances from every other community
Allows migration, integration, isolation and minority situations, simple scenarios (2 isolated communities) to directed graph

A concrete measure of bilingualism:
The difference that your target audience makes to your linguistic output

Comprehensive intelligibility score:
How similar are speakers’ utterances?

Functional intelligibility score:
How similar are speakers’ utterances when designed for each other?

Bilingualism = Functional - Comprehensive

Linguistic diversity tracks social change

Linguistic diversity cannot be studied without considering dynamic social structures
No specific learning ability is required to explain bilingualism