LING3701/PSYCH3371: Lecture Notes 18 Phylogeny: Is Language Learning Just Statistics?

We've looked at how language can be statistically learned. Is that all there is?

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18.1 Evidence that much of language learning is statistics

- 1. Statistical models are fairly successful
 - segmentation
 - grammar induction
- 2. Language evolved recently (so it shouldn't be very different from what we had before)
 - 5,000,000–8,000,000 y.a.: humans diverge from common ancestor of chimps/bonobos
 - tool use inherited to humans, chimps, ..., but no language
 - 2 million y.a.: start of ice age, homo erectus
 - fire (1/2 mil y.a.),
 - clothing
 - 1 million y.a.: homo heidelbergensis
 - branch (until 30,000 y.a.): neanderthal, tools, burials, communication?
 - 200,000-100,000 y.a.: homo sapiens
 - humans nearly wiped out? (Spencer Wells DNA stats: population 2000)
 - lower larynx, innervation for breathing control both necessary for language
 - 40,000 y.a.: particularly cold ice age, 'upper paleolithic revolution'
 - organized settlements: campfire, storage pit, in narrow valley for hunting
 - tools indicate specialization of skills
 - built boats/rafts to colonize New Guinea and Australia
 - cave paintings indicate reference (it's paint, and it's a deer)
 - humans probably had language by this time

So language seems like less of a change than upright posture.

- 3. Animals can learn aspects of language (but they don't see the value of it)
 - Alex the parrot (Irene Pepperberg) name things (but wants to go back to cage)
 - Koko the gorilla (Francine Patterson) learned to sequence ASL signs
 - Washoe the chimp (Allen & Beatrix Gardner) taught signs to her adopted son Loulis
 - Akeakamai the dolphin (Louis Herman) with sibling, demonstrated 'creative' and 'synchronous' trick

18.2 Evidence that some of language learning isn't statistics

- 1. Gold's theorem (but very strict assumptions)
- 2. double dissociation (but there are confounds)
 - Williams Syndrome,
 - SLI from FOXP2 gene: assoc. w. morphology & other fast sequencing

3. critical period

- Jim:1;6 & Glen:3;9 hearing of deaf parents: no syntax, but learned ok,
- Genie:13yrs deprived of speech during childhood, syntax deficits
- Nicaraguan Sign Language (Sengas) children learn pidgins as creoles, w. morphology