

## Constraints on language origins

Sverker Johansson

School of Education & Communication, Jönköping University, Sweden, Isj@hik.hj.se

[To be included in the Theme Session "Language Evolution: Biological, Cultural, and Bio-Cultural", by Verhagen & Zlatev]

Innumerable scenarios exist for the evolution of language, and direct empirical data on language origins are scarce. But the plausibility of many scenarios can still be estimated from general principles and indirect data.

Some principles apply to any unique evolutionary transition (cf. Poole & Penny 2006):

- Parsimony implies that the transition likely took place along the stem lineage, between the last common ancestor (LCA) with an outgroup, and the LCA of the crown group.
- Biological processes that demonstrably occur today are preferable to unique causes (cf. Lyell 1830).
- Is the scenario congruent with phylogenetic and fossil data?
- Would the postulated selective pressures actually lead towards the right end result (Johansson et al 2006)?
- The "chimp test": are the postulated selective pressures *absent* in relatives that didn't make the transition (Bickerton 2002, Johansson 2005)?

Some constraints are more language-specific:

- The actual end result of language evolution (modern language) is imperfectly known. Is the postulated end result plausibly evolvable (Kinsella 2009, Johansson 2009)?
- Language evolved in a cultural context, in parallel with human cognition – is the scenario congruent with what is known, archeologically and otherwise, of the parallel evolution of culture and cognition?
- Language is an evolving cultural entity in its own right – is the coevolution of language and language capacity taken into account (Johansson 2005, 2009)?
- Is the implied organisation of language congruent with neurological data (Kyriacou & Johansson, 2010)?
- Is the ontogeny of language and human cognition taken into account?
- Do postulated intermediate steps and stages make linguistic sense (Stade 2009)?
- Can the scenario be simulated? With what results?

This list of points will be used as a reality check for a number of scenarios of language evolution. Among the scenarios to be evaluated are Locke & Bogin (2006), Bickerton (2009), Mithen (2006), and Zlatev et al (2005).

## References

- Bickerton, D. (2002) Foraging versus social intelligence in the evolution of protolanguage. In: *The transition to language*, ed. A. Wray, 207–25. Oxford University Press.
- Bickerton, D (2009) *Adam's tongue*. Hill and Wang
- Johansson, S (2005) *Origins of language – constraints on hypotheses*. Amsterdam:Benjamins
- Johansson, S (2009) *Evolutionary constraints on language and speech*. Presented at *Speech and Brain 2009*, March 2009, Helsinki, Finland. [http://www.helsinki.fi/puhetiheet/tutkimus/fonetiikka/speeb09abs/johansson\\_abstract.pdf](http://www.helsinki.fi/puhetiheet/tutkimus/fonetiikka/speeb09abs/johansson_abstract.pdf)
- Johansson, S & Gärdenfors, P & Zlatev, J (2006) Explaining why chimps talk and humans sing like canaries. *Behavioral and Brain Sciences* 29(3):287-288.
- Kinsella, A (2009) *Language evolution and syntactic theory*. Cambridge University Press
- Kyriacou, A & Johansson, S (2010) *Why language evolution research might help in identifying biologically plausible linguistic processing primitives* in Smith et al (2010) *The evolution of language* Singapore:World Scientific
- Locke, J & Bogin, B (2006) Language and life history: A new perspective on the development and evolution of human language. *Behavioral and Brain Sciences* 29(3):259-280.
- Lyell, C (1830) *Principles of geology. Being an inquiry how far the former changes of the earth's surface are referable to causes now in operation*. London: John Murray
- Mithen, S. (2006) *The Singing Neanderthals*. London: Weidenfeld and Nicolson.
- Poole, A M & Penny, D (2006) Evaluating hypotheses for the origin of eukaryotes. *BioEssays* 29.1:74-84
- Stade, C (2009) *Abrupt versus Gradual Evolution of Language and the Case for Semilanguage*. MSc thesis UCL
- Zlatev, J., Persson, T., & Gärdenfors, P. (2005). Bodily mimesis as "the missing link" in human cognitive evolution. *Lund University Cognitive Studies* 121.