Linguistic diversity and language ecologies

The structural diversity of human language is still massively underestimated by most theories and research traditions — even when estimates are limited to spoken languages and do not include the as yet largely unexplored diversity of sign languages. The reason why we underestimate diversity is located at the very heart of the methodology of linguistics, which (since Pāṇini) traditionally accounts for variation not in terms of statistical models (as one would do in other sciences) but in terms of interacting rules or constraints. The interacting constraints or 'categorical' approach is characteristic of both the analysis of individual languages (e.g. 'all English sentences have an overt subject' and 'delete subjects under coreference') as well as in the analysis of cross-linguistic patterns (e.g. 'in all languages, complements merge with heads on the right' and 'in all languages, complements can re-merge on the left if their own complements first re-merge as well', Biberauer et al. in press). In the analysis of cross-linguistic patterns, the categorical approach has conveyed a strong message that despite all surface variation, languages share a distinct universal and invariant core.

However, the approach is deeply problematic because categorical universals cannot be tested against empirical samples from the set of languages that are or were spoken on the planet (our samples are too small for ruling out with sufficient probablity that some languages outside the sample violate the analysis; cf. Piantadosi & Gibson, in press). In response, some linguistics have sought justification of categorical universals outside grammatical analysis, e.g. in learning theory or evolutionary considerations (e.g. Chomsky 1964, 2004, etc). A review of existing claims about categorical universals (e.g. the existence of syllabes, words, recursive phrase structure, N vs V features, head-complement order, affix vs clitic behavior, subordination patterns etc), however, reveals a severe lack of unambiguous evidence in these regards. The only categorical universals that retain a certain degree of plausibility — e.g. the availability of headed hierarchical structures ('merge') and computational supra-regularity -- turn out to be general cognitive faculties, reaching far beyond grammar (and serving fundamental needs in visual cognition, inferencing, mathematics etc.; Jäger & Rogers 2012, Stobbe et al. 2012, among many others). Children can adapt these faculties for language based on the input they receive when it matters for specific structures (Ambridge et al. 2008, Perfors et al. 2011) but there is no reason to assume that these faculties matter universally in all languages and all structures (pace Berwick et al. 2011).

Given this, we need an alternative approach to evaluating universality vs diversity in language (Croft 2003, Bickel 2007, Evans & Levinson 2009, among many others). I propose an approach that builds statistical models of universal trends in language change and diversification and that anchors these models in varied and highly specific aspects of the biological and social nature of our species, i.e. in the natural and social environment (ecology) within which languages evolve over time. The approach will be illustrated with recent case studies (Bickel 2013).

References:

Ambridge, B., C. F. Rowland, & J. M. Pine, 2008. Is structure dependence an innate constraint? New experimental evidence from children's complex-question production. Cognitive Science 32, 222–255.

Berwick, R. C., P. Pietroski, B. Yankama, & N. Chomsky, 2011. Poverty of the stimulus revisited. Cognitive Science 35, 1207–1242.

Biberauer, T., A. Holmberg, & I. Roberts, in press. A syntactic universal and its consequences. Linguistic Inquiry.

Bickel, B., 2007. Typology in the 21st century: major current developments. Linguistic Typology 11, 239–251.

Bickel, B., 2013. Distributional typology: statistical inquiries into the dynamics of linguistic diversity. In Heine, B. & H. Narrog (eds.) The Oxford Handbook of Linguistic Analysis, 2nd edition. Oxford: Oxford University Press.

Croft, W., 2003. Typology and universals. Cambridge: Cambridge University Press [2nd edition].

Chomsky, N., 1964. Current issues in linguistic theory. The Hague: Mouton.

Chomsky, N., 2004. Beyond explanatory adequacy. In Belletti, A. (ed.) Structures and beyond: the cartography of syntactic structure, 104–131. Oxford: Oxford University Press.

Evans, N. & S. C. Levinson, 2009. The Myth of Language Universals: language diversity and its importance for cognitive science. Behavioral and Brain Sciences 32, 429–448.

Jäger, G. & J. Rogers, 2012. Formal language theory: refining the Chomsky hierarchy. Philosophical Transactions of the Royal Society B: Biological Sciences 367, 1956–1970.

Perfors, A., J. B. Tenenbaum, & T. Regier, 2011. The learnability of abstract syntactic principles. Cognition 118, 306–338.

Piantadosi, S. T. & E. Gibson, in press. Quantitative standards for absolute linguistic universals. Cognitive Science.

Stobbe, N., G. Westphal-Fitch, U. Aust, & W. T. Fitch, 2012. Visual artificial grammar learning: comparative research on humans, kea (Nestor notabilis) and pigeons (Columba livia). Philosophical Transactions of the Royal Society B: Biological Sciences 367, 1995–2006.