Journal of Neurolinguistics 43 (2017) 199–203

Contents lists available at ScienceDirect

Journal of Neurolinguistics

journal homepage: www.elsevier.com/locate/jneuroling

Short communication

Do languages evolve or merely change?

Luc Steels

ICREA, Institute for Evolutionary Biology (UPF-CSIC), PRBB, Dr. Aiguadar 88, 08003 Barcelona, Spain

ARTICLE INFO

Article history:
Received 26 July 2016
Accepted 12 October 2016
Available online 15 November 2016

Keywords:
Language evolution
Language change
Fluid construction grammar

ABSTRACT

The paper clarifies the point of view of evolutionary linguistics, a field that seeks causal explanations for language change as observed by historical linguists by using theoretical models gleaned from contemporary evolutionary biology, in particular replicator-dynamics and level formation.

1. Introduction

In a recent publication, Berwick and Chomsky state: "Languages change, but they do not evolve. It is unhelpful to suggest that languages have evolved by biological and nonbiological evolution - James Hurford's term. The latter is not evolution at all." (Berwick & Chomsky, 2016, p. 52). This view is actually quite common in linguistics, but there is a growing group of 'evolutionary linguists' who believe, on the contrary, that an evolutionary perspective is not only appropriate but our best bet for understanding language evolution (Blevins, 2006; Bybee, Perkins, & Pagliuca, 1994; Croft, 2000; Hurford, 2012; Mufwene, 2002; Steels, 2011, a.o.). The objective of this paper is to explicate better this position and thus overcome an unproductive dichotomy and fruitless debate.

Clearly the question of language origins decomposes into two: (1) the evolution of the language faculty and (2) the evolution of languages (Spanish, Italian, Japanese, Indonesian, etc.).

(1) The language faculty is the set of neurobiological mechanisms needed for processing and learning language. Research about the nature and origins of the language faculty today often goes under the banner of *biolinguistics* (Boeckx, 2011). It must obviously rest on adequate models of language processing and learning (as developed in psycholinguistics and computational linguistics), and their implementation in neural processing (as researched in neurolinguistics). Once we have a clear idea about the biological basis of language, which is certainly not the case today, the incredibly powerful machinery of evolutionary biology is available to investigate the genetic basis of the relevant brain structures, how and when the implicated genes could have appeared in the human lineage, what kind of selectionist pressures were operating, how the genes steer development, etc.

(2) A language is composed of a sound system, a conceptual system, and a vocabulary and grammar system. All of these systems are highly complex and to a very large extent language-specific. Where do the very large number of building blocks making up these three systems come from? This question is traditionally addressed by historical linguists who have collected a huge set of examples and reconstructions of historical language change, identified universal trends of

E-mail address: steels@arti.vub.ac.be.

http://dx.doi.org/10.1016/j.jneuroling.2016.10.001
0911-6044/

change (usually under the label of grammaticalization) (Heine & Kuteva, 2007), and proposed phylogenetic trees showing the cultural dependencies between languages and language families (Gray & Atkinson, 2003). This effort has recently been complemented by research into causal and mechanistic models for these attested historical trends (Steels, 2011). The models are formulated in terms of known characteristics of human information processing, the nature of human interaction patterns, the structure and change in human populations, and the changing communicative challenges that human societies may generate.

In this article, I am concerned with (2), i.e. the evolution of languages, because that is what the controversy is about: Does it make sense to speak about evolution in this case? In other words, is a language system exhibiting genuine (non-biological) evolution - which, I guess, we should then call cultural evolution even though there is apparently quite some resistance against using this term - or are languages merely 'recycling the limited alternatives that the biological envelope makes available' (Bickerton, 2007, p. 511), in other words, is language change only exhibiting random surface variations within the biologically heavily constrained framework of Universal Grammar?

In my own experience, the arguments against the evolutionary linguistics point of view are often based on a wrong (or one might say a different) conception of what the term evolution means. It is perhaps interesting to recall that Darwin did not use the term evolution at all in his book 'On the origins of species', but talked about transmutation instead, because evolution at that time meant either the unfolding of a predetermined plan, which Darwin wanted to put into question, or the gradual development of a system towards something better. The latter sense was used by philosophers such as Auguste Comte and Herbert Spencer in the context of the social sciences, emerging around the same time as Darwin wrote his key work (i.e. around 1850). However, the idea that evolution implies change towards a 'better' system is not at all implied by the contemporary notion of (biological) evolution - and it is not intended by evolutionary linguists when they use the term evolution.

Another misunderstanding, again coming from the usage of the word evolution in the social sciences, is that evolution implies some driving force. But, in the currently standard biological interpretation, the contrary is true. Biological change is emphatically not considered to be driven by a particular goal or an 'intelligent watchmaker' who designs and engineers change. The variation is basically 'blind' towards the goal of creating a more adaptive organism and the horse work is done by selection that picks out those variants that contribute to better adaptation.

A third reason why many linguists, even historical linguists, are weary of using the term evolution is because they underestimate the kind of novelty that may emerge in a language. Everybody agrees that there is an erosion of forms (as in the transformation of the Latin "vita" to "vida", then "vitha", "via", and finally "vie" in French) or surface shifts in specific morphological or syntactic patterns (as in the shift in Germanic languages from a tendency for an SOV (subject-object-verb) pattern to an SVO pattern). But there is also by necessity a process of renewal in meaning expression counterbalancing their loss. Renewal often starts from the recruitment of existing lexical materials, which turn into abstract syntactic patterns through semantic bleaching and routinization, then coalesce into morphological paradigms, before eroding again so that the cycle must restart. The expression of future is a well known meaning domain where historical linguists have observed these phenomena very clearly (Bybee et al., 1994), although many other domains are equally illustrative. For the domain of future, we see that the Proto-Indo-European analytic expression "*kanta b^{h}uti", literally 'sing be.3PS.SING' meaning 'he will sing', coalesced into the Latin "cantabi-t" (sing-3PS.SING) in which future is expressed morphologically using an affix attached to the stem. This mode of expression became replaced in late Latin with another analytic form: "canta-re hab-et" (sing-INF have-3PS.SG), which coalesced again in French to become "chantera" (or Spanish "cantará") (sing.3PS.SING). And this synthetic expression was then replaced again with "(il) va chanter" (literally: 'he goes to sing' - but still meaning 'he will sing'). This kind of language innovations did not just happen in the past but are ongoing. They may include the emergence of entirely new syntactic categories (such as articles), new syntactic patterns (for example hierarchical phrase structure, Van de Velde, 2011), new grammatical functions (such as information structure) and case roles, new semantic domains (like evidentials), new morphological paradigms (for example to express classifiers), as well as new sounds, sound complexes, new conceptual building blocks, and conceptualizations. The speed of these types of change is variable. Sometimes it goes very fast, possibly under the influence of rapid population change or intense language contact due to an invasion. At other times it goes much more slowly and may take centuries to complete.

How such innovations arise and spread in a population is the key question evolutionary linguists try to answer. And their key insight is that the same abstract principles contemporary biologists have been using with extraordinary success, namely replicator dynamics and level formation, are the most appropriate route to do so. What exactly is meant by replicator dynamics and level formation?

2. Replicator dynamics

The replicator dynamics model is based on Darwin's original insight into organismic evolution (i.e. species evolution). It has four ingredients: