Kinsella, Anna R., **Language Evolution and Syntactic Theory.** Cambridge: Cambridge University Press 2009. ISBN 978-0-521-89530-9. 222 pp. Price: £60 (hardback).

Larson, Richard K., *Viviane Déprez* & *Hiroko Yamakido* (eds.), **The Evolution of Human Language. Biolinguistic Perspectives**. Cambridge: Cambridge University Press 2010. ISBN 978-0-521-73625-1. 269 pp. Price: £23.99 (paperback).

Any student of linguistics has heard of the famous ban in regulation number 2 in the formal statutes of the Société Linguistique de Paris, approved by the Ministry in March 1866:[1] "La Société n'admet aucune communication concernant, soit l'origine du langage, soit la création d'une langage universelle." Indeed, little was written in linguistics on these topics in the century that followed. But in 1975, heralding a new time, the New York Academy of Sciences organized the meeting "Origins and Evolution of Language and Speech" and 20 years later a proliferation already was underway. The Language Origins Society was founded in 1984 and the biannual International Conference on the Evolution of Language (EVOLANG) was first arranged in 1996, reaching EVOLANG 8 in Utrecht in April, 2010.

The EVOLANG conference volumes offer a good and critical picture of this vibrant multidisciplinary field, but there are literally hundreds of other pertinent contributions, many of them of book-length. Googling on "language evolution" yielded 92 100 hits on October 1, 2010. The two volumes now under consideration both partake in the current discussion.

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The Evolution of Human Language. Biolinguistic Perspectives (henceforth EHLBP) is a volume from the first Morris International Symposium on Language and Communication held at Stony Brook University October 14-16, 2005. The conference was dedicated to discussing the controversial paper "The Faculty of Language: What Is It, Who Has It, and How Did It Evolve" by Marc D. Hauser, W. Tecumseh Fitch and Noam Chomsky that appeared in *Science* in 2002. This paper has generated a lot of critical discussion on many venues. As is natural, several papers in EHLBP relate in some way or another to the claims of the Hauser, Fitch and Chomsky (HFC) paper, which is reprinted as a starter of the volume.

The volume is surprisingly slow in appearing no less than five years after the conference. Another indication of this is the fact that there are just a few references to literature newer than 2006.

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[1] Not in 1871, as wrongly stated on p.1 in Larson, Déprez and Yamakido, 2010, eds.

EHLBP contains four parts: 1. Language architecture, 2. Language and interface systems, 3. Biological and neural foundations, and 4. Anthropological context.

The introduction and Part 1 treat HFC. The basic claims of HFC are that a distinction should be made between the Faculty of Language in the Broad Sense (FLB) and in the Narrow Sense (FLN). FLB includes a sensory-motor system, a conceptual-intentional system, and the computational mechanisms for recursion (= FLN below), which provides the capacity to generate an infinite range of expressions from a finite set of elements. FLN includes just recursion and is the only uniquely human component of the faculty of language. FLN is claimed to have evolved for reasons other than language, such as number, navigation and social relations. Especially the claim that FLN contains recursion only has generated an enormous discussion.

The three HFC authors each contribute a new paper, basically defending their original claims and adding some reactions to the critical discussion that has taken place in the intervening years. Chomsky reiterates his (very abstract) thesis that "Interfaces + Recursion = Language", and that the generative operation of Unbounded Merge (which unites constituents into larger wholes) is what technically constitutes recursion.

Hauser contributes a paper with the telling title "On obfuscation, obscurantism, and opacity: evolving conceptions of the faculty of language" where he complains about having been misunderstood in several respects and furnishes clarifications like "I am not an anti-adaptationist", "The take-home message is not that the study of animal communication is irrelevant", "I did not say that language has nothing to do with communication", and "The hypothesis is not recursion only" (but the computations underlying narrow syntax as they interface with semantics and phonology).

Fitch's paper explicates the notion of recursion from the viewpoints of linguistics, computer science and metamathematics. His linguistic definition is: A recursive rule is one which has the property of self-embedding, that is, in which the same phrase type appears on both sides of a phrase structure rewrite rule. The only example given of a recursive rule is S -> A S B. But equating recursion with self-embedding is too general, at least if one adheres to the classical definition of self-embedding as repeated embedding of the same type of constituent. That is, a properly self-embedding rule invoking S would have to refer to the type of clause, e.g. repeated embedding of relative clauses or of *if*-clauses. The general notion of recursion covers mixed multiple embedding of any types of clauses (and of other constituent types, such as noun phrases).

Treatments of recursion do not tend to give enough clarifying examples and this is true of EHLBP as well. Here is an authentic recursive example from the ICE-GB corpus of double center-embedding of clauses: [$_M$ *The reason* [$_{C-1}$ *why this question of* [$_{C-2}$ *when the copy was made*] *is of some interest*] *is that ...*]. Interestingly, most of the other papers in the volume take no direct stand on the HFC claims. Massimo Piattelli-Palmarini, however, confesses to being a firm

believer in Chomskyan including HFC thoughts, whereas Derek Bickerton turns out to be their strongest critic included in this volume. Bickerton notes that language simply cannot have emerged instantaneously in the form of a perfect system, as Chomsky's views go. Bickerton puts forward the idea that the original impetus for language would have been its recruitment for collective organizational use in scavenging food remains of the prey of big predators. This could most effectively be done by groups consisting of cooperating members.

Peter Gärdenfors and Mathias Osvath make the interesting point that ecology might have been a relevant factor when language emerged. Internal mental representations detached from here-and-now situations created an internal world that enabled prospective cognition and made communication about future goals advantageous for hominins. The relevant ecological niche is argued to have existed as early as in Oldowan culture some two million years ago when the first sharp stone-edged tools were invented and got transported over long distances.

Michael Corballis reiterates his theory that early language evolved before speech in the visuo-gestural and facial mode within a time frame much like that of Gärdenfors and Osvath. Corballis' main arguments for the gestural hypothesis are (i) early human brains were better pre-adapted for manual action, (ii) great apes cannot be taught vocal communication systems, and (3) language is so complex that it must have evolved slowly under the pressure of natural selection. Of course, what remains unexplained is how and when the shift to vocal communication took place. Corballis basically endorses a late and sudden restructuration around 50 000 years ago.

Dan Sperber and Gloria Origgi's contention is that the interaction between language and naïve psychology, i.e. the ability to represent the mental states of others, made possible the evolution of human communication. This development cannot be properly understood without realizing the profound importance of pragmatics, the most central function of language in use being to provide partial hints as evidence of what the speaker tries to communicate, rather than to exactly encode the 'whole' meaning.

Most of the contributions in the volume are interesting and thought-provoking but the overall picture is heterogeneous, there is not much consensus even on basic issues. In Kuhnian terms the topic of language evolution is still in a pre-paradigmatic state. Perhaps that is why the editors do not even try to distil a synthesis. However, at least one generalization does seem warranted: the original HCF position has met with strong criticism and many of the contributors do not even mention it, thereby indirectly signaling that they do not consider it (or minimalism) a fruitful approach.

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This statement naturally brings us to the other item of the current review, Anna R. Kinsella's *Language Evolution and Syntactic Theory* (2009). This is a revised version of Kinsella's (formerly Parker) PhD thesis at the University of Edinburgh.

This book is an incisive study of what types of data, arguments and hypotheses can be brought to bear on the question of language evolution. One of Kinsella's merits is that she has taken seriously and presents, as one of the first linguists, what 'real biology' (as opposed to biolinguistic speculation) has found out about the general properties and conditions of evolution (another prominent proponent of this approach is Kinsella's supervisor James Hurford, e.g. Hurford 2007). Kinsella also draws upon foundational work in medicine, neuroscience, and genetics.

Kinsella's main aim is to scrutinize the evolutionary plausibility of the current variant of the generative paradigm, the Minimalist Program (MP). Some prominent features of MP are the strive for minimizing the forms of representation and the length of derivations, overall economy and reduction of descriptive apparatus, elimination of the distinction between deep and surface structure, and postulation of the three rules Merge, Agree and Move. The two levels remaining in MP are Phonological Form and Logical Form (= semantic representation) which are mediated by the Narrow Language Faculty, considered as a recursive computational system. This basic architecture is considered to be innately universal and to have emerged in one big saltational leap, rather than by slow adaptation. Typical of MP is the claim that language in the form just sketched is perfect. A critical examination of the tenability of these theses, and of the presumed economy of MP, is the main concern of Kinsella's book.

Kinsella convincingly argues that evolution based on natural selection never leads to perfect outcomes. Normally it leads to higher fitness but this is not equal to highest fitness (= perfection). A perfect system should be entirely flawless. Instead of perfection, gradual adaption rather leads to what Herbert Simon in 1957 called *satisficing* – that is, a reasonable (but not perfect) solution is reached to survive and reproduce. Richard Dawkins sharpened the notion of satisficing to *meliorizing* – reaching a better evolutionary solution under competitive pressure. A meliorizing improvement is an adaptation under pressure and surpasses a satisficing one, but falls short of an optimal solution, which in turn falls short of a perfect solution.

Many facts show that languages do not tend to be perfect systems, MP perfection being defined as maximally reduced economy. Morphology tends to contain many imperfections like allomorphy, suppletion and inflectional types, both case and word order might express who does what to whom in some languages, ambiguity is omnipresent, synonymy seems superfluous, phonetic reduction might be economic for the speaker but confounds the speech signal for the hearer to comprehend, etc.

In short, overall economy is not the best solution to communication. Rather, adaptive evolution is likely to result in non-economic and inefficient systems with degeneracy, redundancy, vestiges, and partial inefficiency, but also yielding robustness to cope with changing outer conditions and variability among the language users. More than one subsystem can perform the same function. Such

multiplication produces modularity and creates capacity to adapt to new functions by differentiation.

Kinsella devotes an interesting chapter to recursion, by HFC claimed to be the very characteristic that constitutes the Faculty of Language in the Narrow sense. The notion of linguistic recursion is clarified in an illuminating way. Nested recursion (= center-embedding) requires invocation of a stack-type memory to keep track of the pending open dependencies whereas tail recursion (leftwards or rightwards) does not require this expenditure. Even if tail recursion formally is equivalent to plain stacked iteration, Kinsella rightly points out that semantics forces linguistic tail recursion to be hierarchic, e.g. [NP [NP [NP John]'s mother]'s cake]. Full-blown recursion is possible only after hierarchically organized structures are available.

Kinsella's examples of nested recursion are somewhat outdated, e.g. *The mouse the cat the dog chased bit ran*. Such examples with double relativization of grammatical objects have been shown never to occur. In particular, any type of multiple nested recursion of clauses seems to be absent from spoken language (Karlsson 2007). Therefore Kinsella's claim (p. 152) that a nestedly recursive sentence like the (fabricated) one just mentioned "requires augmented memory, but also exhibits more efficient structure" seems unneeded: such structures never occur in spoken language and therefore they cannot have had any role in syntactic evolution either. Similarly, Kinsella overstates the role of recursion when saying (p. 152): "For those concepts that are expressible in tail recursive terms, no complex memory would have been required, but for nested recursive structures, the ability to keep track in a stack fashion would have been a prerequisite, but would in turn have brought about significant reductions in communicative effort." Later on the same idea reoccurs (p. 157): "[b]eing able to structure not just thoughts, but also language recursively, would have given our ancestors an advantage in terms of energy. Recursion is a compressing device; representing the relations between events or entities in a recursive fashion is more concise, and thus involves less articulatory effort on behalf of the speaker, saving both time and energy." Kinsella's thinking about the nature and role of nested recursion seems to be governed by a certain written language bias (cf. Linell 2005).

Returning to the main topic and summing up: Kinsella's informed analysis shows that the Minimalist Program is not a viable theory of the emergence of language under the criterion of evolvability. It also demonstrates the importance of adopting a truly multidisciplinary approach.

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Literature

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