The dynamics of syntax: implications for LFG

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The functionalist program of explaining typological variation in syntactic patterns as responses to processing constraints has been fruitful in linguistics, uniting as it does syntax, historical linguistics, psycholinguistics, and typology. In this program, linguistic competence is a crystallization or grammaticalization of performance. Hawkins (1994, 2004, 2007) is prominently associated with the program, and it is also central to Dynamic Syntax as developed by Kempson and colleagues (Cann et al 2005), which aims to explain syntactic patterns as falling out of the incremental mapping of temporal word sequences to semantics.

The architecture of LFG was also heavily influenced by psycholinguistic processing findings (Bresnan 1982, Kaplan and Bresnan 1982), but in a way diametrically opposed to the Hawkins-Kempson version of the program. It was Kaplan's insight that LFG should abstract away from procedural computational operations; it should embody "order-free composition", permitting variation in processing schedules whether left-to-right, top-down, or bottom-up. The stunning typological diversity and flexibility of syntactic structures, especially in Australian aboriginal syntax as revealed in the work of Simpson 1991, 2007; Andrews 1996; Austin and Bresnan 1996; and Nordlinger 1998, among others, lent empirical support to this design decision, as did the early psycholinguistic work on syntactic comprehension and production by Ford, Bresnan, and Kaplan (1982) and Ford (1982).

The declarative, non-procedural design of LFG made it easily embeddable as the representational basis of theories such as Optimality Theory (Bresnan 2000, Kuhn 2003), stochastic OT (Bresnan and Aissen 2002; Bresnan, Deo, and Sharma 2007; and Bresnan and Nikitina 2009), and exemplar theories of grammar (Bod and Kaplan 1998, Bod 2006) which have strong functionalist interpretations in the domain of psycholinguistics.

Recent empirical work which I will review shows that syntax is dynamic in the sense that syntactic probabilities are used both in sentence judgments and in real-time reading and speaking at the milllisecond level – and that changes in historical time leading to different varieties of English are reflected in these micro-level measures (Bresnan and Ford 2009). I will argue that the evidence lends support to probabilistic and exemplar-based theories of grammar, and so perhaps validates the non-procedural architectural design of LFG – although much more work should be done on probabilistic and exemplar-based LFG.