

**LFG AND DYNAMIC SYNTAX:
TWO NON-DERIVATIONAL THEORIES**

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Abstract

This paper provides a brief report of the workshop convened and chaired at LFG09 by the author under the title 'Blurring Component Boundaries: Levels of analysis or growth of information?'. The purpose of the workshop was to introduce the LFG community to the system developed by Ruth Kempson and a number of co-workers under the name Dynamic Syntax (DS), and to promote discussion and comparison of LFG and DS and the thinking that lies behind them. The paper explains the theme of the workshop, summarises some of the points made in the presentations, only one of which is published here in full, and comments briefly on some issues that emerged in or arose from the discussion.

1. Introduction¹

One of the (many) highlights of LFG 2009 was a workshop entitled 'Blurring Component Boundaries: Levels of analysis or growth of information?', which aimed to promote comparison of and interaction between LFG and the system recently developed by Ruth Kempson and a

¹ I am grateful to the workshop participants for agreeing to take part, in particular to Ruth Kempson for extensive discussion beforehand about the theme and organization of the workshop, to the Mont Follick fund of The University of Manchester for financial support, to the local organizer, Anna Kibort, for agreeing to include the workshop in the conference programme and for her heroic organizational efforts, to all those who participated in the general discussion which followed the presentation of the papers, and to the following who generously found time to comment on an earlier draft of this paper at ludicrously short notice: Ash Asudeh, Joan Bresnan, Miriam Butt, Mary Dalrymple, Tracy Holloway King and Ruth Kempson. Nonetheless, responsibility for the views expressed in this paper remains with the author.

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number of co-workers known as Dynamic Syntax (DS).² The full programme of the workshop included the following papers, succeeded by a period of general discussion:

Louise Mycock "What do you do?" Variation in interrogative predicates

Ruth Kempson & Jieun Kiaer Narrowing the competence-performance gap: Syntax as time-linear growth of semantic representation

Miriam Bouzouita & Stergios Chatzikiyiakidis Clitics as calcified processing strategies: The case study of Spanish clitic placement and the PCC as a tree-logic restriction

Joan Bresnan The dynamics of syntax: Implications for LFG

The contributors were chosen so as to provide a balance both in terms of approach (Bresnan and Mycock for LFG and Kempson & Kiaer and Bouzouita & Chatzikiyiakidis for DS) and experience (Bresnan and Kempson are senior scholars whose work has been fundamental in developing the respective systems while the others are recent PhDs: Kiaer (2007), Bouzouita (2008), Chatzikiyiakidis (in prep.) at King's College London with Kempson and Mycock (2006) at Manchester with Vincent). Unfortunately, for a variety of reasons, only the paper by Bouzouita & Chatzikiyiakidis is published in full in these proceedings, while the others are represented by their abstracts.

In the account of the workshop that follows I will explain the thinking behind convening it, summarise some of the points made in the presentations and comment briefly on some issues that emerged in the discussion.

² Although various distinctive features of DS will emerge in what follows, here is not the place for even a brief overview of the system. For this the reader is referred to Kempson *et al.* (2001), and Cann *et al.* (2005). Cooper & Kempson (2008) is a wide-ranging collection of papers that relates to many of the issues covered in this workshop, particularly in regard to the nature of linguistic data and the modes of theoretical explanation.

2. The theme

Our idea in organizing the workshop was that it would be of interest to compare LFG and DS as systems or architectures which share a commitment to both non-derivationality and formalization. At the same time we felt that a simple point-by-point comparison of the two approaches would have taken up more time than was available within the confines of a half-day workshop, and in any case was not necessarily the most illuminating way to proceed. We therefore sought to identify a theme that would highlight the differences and similarities while also advancing general linguistic debate at a level beyond the parochialities, necessary but sometimes overly constraining, of individual theories and notations. The eventual theme was proposed by Ruth Kempson since, as she noted, the process of theory construction and elaboration inevitably involves drawing distinctions and creating boundaries, which other theories may feel the need to break down. The boundaries here are of two kinds, which we may for convenience dub ‘internal’ and ‘external’. By ‘internal’ I mean the relation between the components or levels within a given theory — within LFG for example the decision as to whether certain information is best represented in c-structure or f-structure or s-structure. Internal issues in this sense are particularly characteristic of a parallel correspondence architecture such as that of LFG. ‘External’ refers to the way the contents of the grammar relate to other parts of the language processing and production systems or to the types and sources of linguistic data. This kind of boundary has been of especial significance in the single level structure of DS which brings together in its formal metalanguage properties traditionally associated with the grammar (or competence) and with the parser (i.e. related to performance). Boundaries of all kinds were addressed in the workshop.

3. The papers

In this section I will briefly review the papers, seeking to relate them, as appropriate, to the external and internal interpretations of the theme. Louise Mycock’s paper introduces a new class of data into the extensive theoretical discussion of interrogative constructions, namely languages in

which a single, and in the limiting case synchronically unanalysable, verb expresses the semantic content of English *what happened?* or *what did you do (to X)?* (for the relevant data see the survey in Hagège 2008). Whereas interrogative constructions are usually analysed through a combination of c-structure and f-structure properties, Mycock seeks to show that the best analysis for this new data by-passes f-structure and relies instead on a combination of i-structure and s-structure, thus challenging standard assumptions about the interaction of levels within LFG, and more generally pushing the boundaries of our understanding when it comes to the analysis of the full range of cross-linguistically available interrogative constructions. The paper by Kempson & Kiaer, the full version of which is now in press (Kempson & Kiaer 2010), deals with the more widely studied body of data brought to light by (multiple) scrambling and long distance dependency patterns in Japanese and Korean and argues for an account in which the grammar directly reflects the constraints and needs of the human language processing system. In this sense, as their title indicates, it represents a move in the direction of narrowing the gap between performance and competence, an external boundary in our terms, and thus views natural language structures as constrained, and explained, by the dictates of performance. This explanatory strategy is built directly into the formalism of DS and is accordingly characteristic of all work within this framework. The insight that is pursued here is akin to that developed over a number of years by John Hawkins (see for example Hawkins 2004 and references there).

The same logic of explanation is explored in relation to changes in pronominal systems by Bouzouita & Chatzikiyiakidis, thereby probing — and potentially blurring — the traditionally clear boundary between synchrony and diachrony. They investigate two connected phenomena, namely first the emergence in the history of Spanish of morphosyntactically fixed clitic combinations from the pragmatically conditioned distribution of the cognate items in Latin, and second the Person Case Constraint whereby accusative and dative clusters involving one or more first or second person pronouns are blocked or restricted in their distribution. Both of these are argued to follow from a general condition of DS that allows the parser to hold only one item unplaced (in their terms an ‘unfixed node’) at a time. The diachronic change is that the pragmatic principles of pronoun choice are resolved through the freezing

of the relevant information in complex lexical entries by a process named ‘routinization’. Bouzouita & Chatzikyriakidis thereby offer a new take on the kind of dataset that has figured extensively in the literature on grammaticalization, in which pragmatics, traditionally an aspect of performance, becomes grammar, or competence. That literature has tended to eschew formal approaches, though as noted in Vincent & Börjars (forthcoming) there is no fundamental conflict between formal methods and the evidence of grammaticalization (see also §4.5 below). Interestingly, too, the account of case involved here (and also in Cann & Kempson 2008) draws heavily on the theory of constructive case developed within LFG by Nordlinger (1998).

Whereas work in DS emphasises the processing dimension, Joan Bresnan’s contribution focussed on evidence, both corpus-based and experimental, demonstrating how the requirements of incremental production influence linguistic structure and preferences. The presentation drew on the data of English dative and genitive alternations, and the circumstances of production which favour *give Mary the money* over *give the money to Mary*, or *the woman’s shadow* over *the shadow of the woman*. Bresnan concluded her paper with some reflections on what the data she had discussed imply for LFG. She noted the openness of the LFG architecture to various developments such as competition-based (OT) and stochastic interpretations, the latter in particular allowing for a move towards a different part of the functionalist community than the processing type of explanation favoured by DS and by Hawkins. She thus opens the door to probabilistic models of grammar, including Data-Oriented Parsing, which have traditionally been eschewed within most if not all formalist traditions. The competence/performance boundary is once again under challenge, though from a different direction.

4. Some issues

In this section I focus on some of the issues that emerged from the workshop. It goes without saying that this is a personal take on the occasion and others may well have differing interpretations. I hope, however, by formulating the issues in a general way to provide ground for further conversations and debates of this kind.

4.1 The data

One topic that took up a good deal of the discussion time concerned the nature of linguistic data. Of note in this connection was Bresnan's reliance on corpus and attested examples or data elicited under controlled experimental conditions as opposed to the traditional appeal to the native speaker's intuition. Lively debate arose from her suggestion that once preference is given to such data the nature of models necessarily changes. Her opening of the door to the exemplar-based approach (see for example Bod 2009 and references there) represents in many ways a more radical divergence from the traditional view of the relation between theory and data than anything else in the domain of theoretical syntax, DS included.

Two further data-related points that emerge from the other papers are the fruitfulness of building on typologically inspired research in developing theoretical issues (Mycock) and the need for careful attention to the accuracy and reliability of historical evidence in formal as well as in philological work (Bouzouita 2008).

4.2 Theories, architectures and programs

Inevitably, given the workshop's conception, attention focussed on a number of points of detail about differences and similarities between DS and LFG as theories of natural language (morpho)syntax and semantics. A larger issue that hangs behind such discussions is what it means to talk about a theory and to compare one theory with another. LFG is regularly referred to as a theory but it is also common to say that LFG provides an 'architecture' for grammar (cf. Bresnan 2001, the first two parts of which are entitled 'On the architecture of universal grammar' and 'Formally modelling the architecture'), and Bresnan's presentation alluded at various points to the 'non-procedural architectural design of LFG' (quotation from her workshop abstract). What, we may then ask, is the difference between an architecture and a theory? A third term to add to the mix here is 'program' (the choice of the American spelling in this context is deliberate!). Advocates of Minimalism are especially insistent that what

they are pursuing is a program and not a theory (Chomsky 1995, Boeckx 2008: 3-4). Again the question arises: is an architecture different from a program, and if so, how?

In this connection, Hornstein (2009: 15) writes: ‘There are many analyses that fly under the minimalist flag and many different ways of understanding the goals of the program, often embodied in different technologies.’ The same could be said of LFG. To take an instance from the workshop, Mycock’s analysis of interrogative predicates shifts the burden of accounting for these constructions and unifying them with other modes of interrogation from c-/f-structure to i-/s-structure, yet either account is clearly consistent with the overall parallel correspondence architecture of LFG and both differ materially from any derivationalist version.

One positive answer to the question about the difference between a program and an architecture is that a program has a particular conceptual goal or ambition which guides the types of analysis that are formulated. An architecture on the other hand defines a conceptual space within which analyses and goals may be formulated, but does not constrain those who inhabit that space to a single vision of what they are doing there. In the case at hand, LFG does not enforce or endorse a particular understanding of how language relates to the mind in the way that Minimalism does. A less charitable answer would be that a program — or at least the Minimalist Program! — is vaguer and more open to inconsistencies since practitioners have freedom to redefine almost at will crucial concepts and constructs (Hornstein’s ‘different technologies’). In these terms, DS appears more like a program since it has an overall vision of where and how to locate explanations for linguistic phenomena and all the analyses so far published, whether of clitics, scrambling or whatever, tend towards the same general processing-related conclusion. Unlike Minimalism, however, the completeness and consistency of its formal definition make it harder if not impossible for individual researchers to use the same metalanguage but mean different things by it, as all too often happens to notions like ‘Case’, ‘Agree’ and the like within Minimalist writings.

The term ‘theory’, by contrast, is capable of a wide or a narrow use. We can, and people frequently do, speak of overarching systems and notations for morphosyntactic analysis like LFG and DS as theories. But we also talk for instance of Bouzouita’s theory of Spanish clitic formation

or Mycock's theory of long-distance dependencies, where what we mean is an account which models the data in terms of a set of formal constructs that are drawn from and depend on the theory in the first sense. The key notions here are 'model' and 'construct', which are fundamental to scientific explanation of any kind (cf. the quotation from Smolensky & Dupoux in section 4.6 below).

4.3 Derivational vs. non-derivational

The relative merits of derivational and non-derivational theories (in the broad sense) of the structure of natural language are regularly debated (see Johnson & Lappin 1997 for excellent discussion and further references, and Sag & Wasow, forthcoming). There is also a long tradition from the derivational side of dismissing other models as notational equivalents (see already Chomsky 1970/76: 69ff). It is by contrast unusual to find explicit comparison of different non-derivational approaches such as emerged in the papers from the workshop and the ensuing discussion. Suffice it to say that here we will take the arguments against derivational or multi-stratal approaches for granted, noting only that this debate is not to be confused with the formalist vs. functionalist debate (cf. §4.5).

4.4 Theory reduction

In a variant of the notational equivalence argument, Hornstein (2009) at various points treats a range of theories as essentially the same and as equivalent to GB. Thus, he writes (cf. also his discussion on pp. 155ff):

I say 'GB style' for I include in this GB's cousins including LFG, GPSG, HPSG and RG. Though the particulars of GB are what I concentrate on, all the above mentioned approaches cut grammars along more or less the same joints. (Hornstein 2009: viii, note 2)

Minimalism, by contrast, is argued to be a step beyond all of these, GB included, in its capacity for generalization and insight. And in Hornstein's version the core construct of Minimalism is taken, not unreasonably, to be Merge, since Merge, understood as a variety of concatenation, is simply the default operation for composing parts into larger syntactic entities. What is

at stake here is the more general philosophical question of theory reduction, that is to say the strategy by which a more particular theory is subsumed, and hence explained by, a more general one. This is a longstanding matter of debate in psychology, where the concern has been whether psychological explanations always reduce to biophysical ones.³

This issue — not, it has to be said, explicitly discussed in our workshop — arises in connection with a comparison between LFG and DS, since LFG as traditionally understood is vulnerable to Hornstein's argument that Minimalism operates at a higher — and by implication more explanatory — level of abstraction than other approaches in a way that DS, with its basis in processing, is not. Put another way, a system that overtly links itself to external constraints, whether due to processing or production, is able to anchor itself against the winds of reductionism which can buffet the free-standing, speaker-hearer neutral, architecture (as opposed to program) that LFG traditionally is. In this sense, as Bresnan reminded us in her presentation, LFG should not forget its roots in the search for a psychologically realistic mode of syntactic description (cf. the papers in Part III of Bresnan 1982).

4.5 Formalism and functionalism

One often discussed issue that the juxtaposition of LFG and DS brings into new relief is the contrast between formalist and functionalist approaches to the description and explanation of natural language phenomena. This is commonly treated as a contrast akin to that between political parties: someone is thought to be either a functionalist or a formalist just as they might be either a Democrat or a Republican or vote Labour or Conservative. Indeed it is sometimes even assumed that individuals

³ For a seminal paper in relation to psychology and reductionism, compare Fodor (1974), revisited in Fodor (1995). We may safely assume that linguistics, like psychology, is in Fodor's terms a 'special science'. See too the contributions to McCauley (1996) and Fodor's trenchant review of Paul Churchland's *The engine of reason, the seat of the soul* (Fodor 1998: 83-89).

read/write for different journals according to their stance on this issue. Thus, Croft (2007: 411), discussing a paper by Bas Aarts, writes:

“I hope that Aarts will succeed in bringing this fact [that there is variation in grammatical categorization: NV] to greater prominence in the formalist research tradition. However, the audience of this journal [*Studies in Language*: NV] is largely functionalist ...”

Yet DS in particular is avowedly functionalist in inspiration while meeting the highest standards of formal completeness and consistency. LFG, by contrast, in keeping with its neutrality in relation to processing/production and its respect for the traditional performance/competence distinction (and despite the use of the word ‘functional’ in two other senses!), has certainly been formally explicit but has not historically been committed to any position on functionalist explanations for natural language phenomena. In this respect, Bresnan’s work over the last few years, outlined and summarised in her presentation at the workshop, has marked a departure from LFG orthodoxy. There are, it is true, hints in this direction already in the reference in Bresnan (2001: 92) to a ‘principle of functionality of c-structure’ and an allusion to Haiman’s work on the economy of expression, but it is in the papers on the stochastic implementation of the model in more recent years that this line of work is most developed. To judge by the exchanges in the workshop, this is still a contentious issue within LFG.⁴

4.6 The role of Universal Grammar (UG)

Whereas the Chomskyan tradition has always firmly adopted the formalist stance that true scientific explanation derives from within a theoretical edifice via the postulation of principles of increasing scope and generality (cf. our discussion of Hornstein 2009 above), LFG has remained more agnostic. As we have noted, its origin lies in an attempt to develop a

⁴ Interestingly, Ivan Sag’s work within the Sign-Based Construction Grammar development of HPSG is taking an increasingly functionalist turn (Sag forthcoming, Sag & Wasow forthcoming), though like mainstream LFG and unlike DS, he maintains a clear distinction between grammar (competence) and parsing (performance).

psychologically more real (and realistic) account of natural language syntax, and it comes with no innatist baggage. It has therefore always been as much concerned with ‘external’ issues of computational implementability as with ‘internal’, reductionist modes of explanation. The tensions between the two are sidestepped within Chomskyan accounts through on the one hand the adoption of a strongly realist stance on the relation between theories and the objects they purport to describe and explain and on the other the postulation of an object — Universal Grammar (UG) — which is inaccessible to independent observation, with the attendant risk of falling into vicious circularity.

The status of universals and UG takes on renewed relevance in the context of Evans & Levinson’s (2009) polemical target article in *Behavioral and Brain Sciences* (henceforth E&L) and the extensive discussion to which it has given rise.⁵ There are, as it happens, no proponents of LFG or DS within the published discussants of E&L, but the issues addressed are of a piece with those that emerged in the course of our workshop and which I have tried to sketch here. One of those discussants, Mike Tomasello, unequivocally entitles his contribution ‘Universal Grammar is dead’ and writes: ‘To make progress in understanding human linguistic competence, cognitive scientists must abandon the idea of an innate universal grammar and instead try to build theories that explain both linguistic universals and diversity and how they emerge.’ (2009: 470).⁶ I will conclude this paper by briefly summarising E&L and the main points that arise in the discussion before suggesting how research in LFG and DS can respond to Tomasello’s exhortation. In so doing I am moving things on from issues that explicitly arose in our workshop in the belief a) that there are many common threads between the discussions in Cambridge and those that appear in the pages of *BBS*, and b) that it is of value to link work

⁵ My thanks to Mary Dalrymple for suggesting that I expand this section to include more coverage of E&L and the controversy the paper has aroused. In fact, so many potential respondents had to be excluded for lack of space in *BBS* that the journal *Lingua* will host a further round of responses in one of its 2010 issues.

⁶ Page references in this section are to the various authors’ contributions in the issue of *BBS* 32 (2009). I have not however listed every response separately in the bibliography to the present paper.

within more specialized research communities such as LFG and DS to these broader debates.

The essence of E&L's argument is that the case for exceptionless linguistic universals has been hugely overstated, and that in consequence there are no grounds to postulate an innate, modular and autonomous UG to account for them. Rather, what are attested are recurrent statistical patterns which are to be explained through a combination of the general properties of human cognition and the particular circumstances of cultural-historical change. They discuss a wide range of claimed universals, including both substantive universals like CV syllable structure and a basic categorial distinction between nouns and verbs, and formal universals such as subjacency and the principles of Binding Theory, and show that in all cases there are counterexamples to any claim for absolute universality. In place of a Chomskyan innate UG they postulate 'an evolutionary model with attractors (e.g. the CV syllable, a color term "red", a word for "arm"), "canals", and numerous local peaks or troughs in an adaptive landscape. Some of the attractors are cognitive, some functional (communicational), some cultural-historical in nature' (2009: 446). Perhaps predictably, the responses oscillate between complete agreement (cf. Tomasello's remarks quoted above) and haughty dismissal as when Friedin (2009: 455) concludes his response thus: 'Data alone cannot speak to the validity of explicit proposals about the content of UG. What is required is an explicit analysis of data that follows from a precisely formulated fragment of a grammar ... The discussion of UG in this article misses the mark entirely.'

There is not room to go into detail here on the range of arguments and examples the authors and their respondents provide, but I would note two things. First, in their contribution Smolensky & Dupoux distinguish two types of what they call cog(nitive)-universals: architectural and specific universals, a distinction which relates to the discussion in section 4.2 above about the nature of an architecture. They argue that 'architectural universals do not yield falsifiable predictions regarding typology, but they yield falsifiable predictions regarding language learnability ... specific universals are tied to particular formal theories specifying in detail the architecture's levels, structures, and operations, thus yielding falsifiable predictions regarding language typology' (2009: 468).

Second, at various points in their paper E&L allude to and compliment LFG as being a model which permits formally testable claims, is responsive to typological diversity, does not involve the postulation of considerable amounts of empty structure, and allows for both constituency and dependency relations to be expressed. DS, perhaps understandably since it is less widely known and discussed, does not get a mention. Yet there are clearly aspects of the DS stance on the nature of grammar and the way it can change over time which are also consistent with both E&L's take on the relation between cognition and culture and Smolensky & Dupoux's underscoring of the need for formal, falsifiable theories. It is of some interest, moreover, that both LFG and DS are able to express on the one hand formal universals indicative of the architecture of grammar, and on the other hand the variability intrinsic to words as reflections of the diachronic changes that have given rise to their particular form and/or interpretation. This confirms once again that formal and functional generalisations do not have to be seen as being in conflict with each other. There is a profound misunderstanding of the role of language change evident in Nevins's (2009: 461) observation that 'integration with the cognitive sciences ... will come from mechanistic explanations, not from handwaving at diachronic contingencies'. There is no more room for handwaving in diachronic linguistics than there is in synchronic work, but to ignore the evidence of change is to discard much of what makes language language.

In short, models like LFG and DS can only gain from E&L's refocussing of the nature of the debate towards the interaction of linguistic structure, cognition and history and away from an obsession with an innate but untestable UG. The door is open for researchers from within these communities to establish even more strongly than hitherto the relevance and importance of their research on the international scene.

5. Conclusions

The first conclusion, to judge by the number of questions and contributors to the discussion period and by informal comments afterwards, is that the workshop was certainly a success. This in turn suggests that further systematic comparison between the assumptions and consequences of

work within LFG and those of other frameworks might be fruitful. There has, it is true, been some work seeking to compare LFG and HPSG. For example, in 2000 the annual conferences of the two groups were held back-to-back with a day of overlap devoted to topics of common interest, but there is certainly room for more such events.⁷ It is an interesting and disappointing reflection of the sociology of the field that the little work that exists on comparing systems tends to lie at one of two extremes. On the one hand there is a long tradition of research into the mathematical power of grammars stretching back to Chomsky's seminal work in the 1950's. On the other there are informal comparisons that arise *en passant* while the main focus of attention and thrust of the argument lies in another direction. Thus, many papers at LFG conferences and elsewhere depart from a dataset or a theoretical point drawn from the large body of literature that simply takes derivationality (formerly in its GB guise and now in a Minimalist one⁸) for granted. Such papers implicitly accord Minimalism the status of the yardstick by which other work should be judged, whereas in fact it is simply (*pace* Hornstein) one among many theoretical systems currently available. I hope therefore that future LFG conferences will see more attempts to compare and reflect on work from systems such as RRG, SBCG, exemplar-based grammar and the like, and thereby to pursue the larger goal of understanding the complex phenomenon that is natural language.

⁷ Tracy Holloway King reminds me of the meetings entitled 'Grammar Engineering Across Frameworks' which she and Emily Bender initiated in 2007 and which have taken place annually since then. She reports that in that forum researchers have shown an openness towards ideas from different frameworks, perhaps because of the overriding need to solve the practical problems of grammar implementation.

⁸ There are, or at least have been, non-Chomskyan but nonetheless derivational frameworks; Relational Grammar is a case in point. But for the purposes of the present discussion and in the current theoretical climate derivationalism and Minimalism can be equated.

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