INTRODUCTION: LINEAR INFORMATION ACROSS GRAMMAR

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This is an introduction to a series of articles on a specified topic, linear information across grammar. In this series of papers, we discuss the nature of and need for linear information across grammar, from phonology to syntax. This introduction explains the theoretical background of this project and how each of the three articles relates to the topic of linear information.

Any theory of grammar that assumes a structure of linguistic elements must deal with the problem of how structure is linearized into a sequence of elements. Interest in the linearization problem has increased since Kayne’s (1994) Linear Correspondence Axiom and Chomsky’s (1995) interface conditions in the minimalist program. Asymmetry in linearization is discussed in morphology and phonology as well as in syntax (cf. Cinque (1996) and Di Sciullo (2005)). The problem of linearization is also related to the theory of performance and parsing (cf. Hawkins (1994, 2004) and Phillips (1996, 2003)). Linguistic interfaces have now been discussed in quite a number of conferences and papers (e.g. Ramchand and Reiss (2007)).

However, the precise nature of linearization and linear information has not been much discussed in the literature. There remain a number of questions to be answered. In this series of papers, we focus on the relation between the linear information of linguistic elements and structure in phonology, morphology and syntax. The problems to be discussed include: (i) whether or not linear information is necessary in the representation of phonology, morphology and syntax; (ii) how structure is linearized into a sequence of elements; (iii) in which direction linearization proceeds in structure (top-
down or bottom-up, from left to right or from right to left); and (iv) what conditions the linguistic performance systems set on linearization of structure.

Each paper proposes its own model of grammar and discusses the problems of linear information in phonology, morphology and syntax:

Tokizaki

Linear information includes prosodic features such as stress and disjuncture, which determine the direction of branching (left/right-branching) and the nature of the syntactic object as (compound-)word or phrase.

Shiobara

Performance factors such as the efficiency of parsing and production in the sensorimotor system determine the way how grammatical computation (namely, syntactic structure-building and prosodic structure-building) proceeds: linearly, from left to right.

Nasukawa

To explain phonological phenomena, precedence relations between categories are rejected in favour of exploiting the dependency relations holding between categories in phonological representations. Positional precedence then becomes a mere by-product of the phonetic interpretation of phonological representations.

All these papers are based on the minimalist program for linguistic theory. These models of grammar are in principle compatible with each other, although there are some differences in emphasis and among the particular points made in the three papers. Tokizaki assumes the standard minimalist framework (Chomsky (1995)) and suggests that parsing rules build structure from phonological information. Shiobara argues that linearization is distributed between core syntax and the syntax-prosody interface: syntactic and prosodic derivations proceed in parallel from left to right in the manner of Phillips’ (1996, 2003) incremental structure-building, and syntactic objects are spelled out as prosodic objects. Nasukawa proposes that precedence relations are unnecessary in phonology, as they are in syntax.

The parts of grammar each paper covers can be represented schematically as (1).
Tokizaki discusses head-complement orders within XPs ranging from CP (C-IP) to Word (Affix-Stem) and Shiobara investigates constituent orders in VP. Nasukawa discusses the precedence relation of features within a segment.

The arguments presented in the three papers share an overall architecture, as in (2) (cf. Fukui (1998), Chomsky (2007)).

(2) Sensorimotor system — [PF — Computation — LF] — Conceptual-Intentional system

We call the bracketed part “grammar” in this series of papers. We define the term “interface” as the relation between the computation and PF/LF. Following Chomsky (2007), we use the term “interface systems” to refer to sensorimotor (SM) and conceptual-intentional (CI) systems. We argue that linear information is necessary in sensorimotor systems but not in grammar per se. Note that in (2), the lexicon and lexical insertion are assumed to be internal to Computation.

In the first paper, “The nature of linear information in the morphosyntax-PF interface,” Tokizaki argues that the hierarchical structure of morphosyntax is mapped onto the linear sequence of elements with stress and disjuncture; stress and disjuncture also play a role in parsing and building the structure the speaker has intended. Left-branching structure may well be linearized without prosodic boundaries because the sensorimotor system hardly expresses disjuncture after the main stress. Constituents with complement-head order are left-branching and compound-like because of
strong juncture. They must have the same stress location as a word in the language. This stress constraint prohibits a complement from moving into the specifier position to derive the complement-head order from the head-complement order in the base. We do not need to specify linear order between head and complement in morphosyntax.

In the second paper, “Significance of linear order in phonologically constrained syntax,” Shiobara argues that grammar is shaped in response to performance efficiency in the sensorimotor system. The test case consists of VP-internal idioms in Japanese and English. The approach to linearization taken in this paper, dubbed the “Prosodic Phase Hypothesis,” provides a prosodically-based account of the distinctive properties of Japanese and English VP-internal idioms, including not only clearly prosodic factors such as weight and sentence-level stress, but also their distributions. This approach adopts left-to-right structure-building in the grammatical computation, which reflects the left-to-right nature of parsing and production.

In the third paper, “Representing phonology without precedence relations,” Nasukawa claims that linear information such as the precedence relation between units is redundant in phonology and can be eliminated from phonological representations. In the pursuit of a strictly monostratal model of phonology, syllable/prosodic structure is fully specified in lexical representations. Accordingly, information relating to the linear order of segments is redundant in representations: dependency relations holding between syllabic categories are sufficient to account for phonological phenomena. This paper therefore investigates the possibility of omitting from phonological representations all precedence relations between units, which would allow positional precedence to be viewed merely as a by-product of phonetic interpretation relevant to the sensorimotor systems. As such, the division between phonology and its external systems would parallel the division between syntax and performance systems.

To summarize, this series of papers presents an overall picture of the relation between linear information and the components of grammar. A general conclusion that can be drawn from these three papers is that linear information is needed at the interface between grammar (including morphology and phonology) and the sensorimotor system. Interface conditions may decide the head-complement orders and the orders between constituents in VP. On the other hand, we can eliminate linear information from grammar/computation/the narrow-syntactic component (NS); even in the smallest domain, such as the segment, it is possible to eliminate the linear information between features. This conclusion may have implications for the study of language
For example, Chomsky (2007: 14) argues that the primary growth of a conceptual-intentional system is followed by externalization, by mapping to a sensorimotor system.\footnote{We would like to thank an anonymous reviewer for pointing out this matter.} We hope that the discussions presented here stimulate researchers in the various fields of grammar to study linearity and structure of languages.

REFERENCES


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