Surface Structure and Interpretation

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This short monograph, which is a "direct descendant" of Steedman (1987), presents a redefinition, within the framework of combinatory categorial grammar (CCG), of the roles and responsibilities of the two theoretical components: surface structure and interpretation. Surface structures are taken to be simply records of the derivation process, while interpretations are predicate-argument structures or logical forms. The central thesis of the book is that complex linguistic phenomena such as unbounded dependencies can be accounted for in terms of these two levels of representation alone, without an appeal to intermediate levels or to rules of movement, deletion, or feature copying. The organization into chapters is as follows:

1. Introduction
2. Combinatory categorial grammar
3. Extraction
4. Conclusion

The opening chapter provides some background and motivation for what is to follow, and particular attention is focused on contrasting the behavior of bounded and unbounded dependencies. It is argued, and illustrated by examples of gapping under coordination, that unbounded dependencies have a strong tendency to preserve canonical linear word order. Bounded dependencies, on the other hand, it is argued, tend to be independent of linear word order, depending instead on an obliqueness ordering over grammatical relations such as subject and object. These two tendencies are proposed as language universals, and cross-linguistic data is briefly mentioned. The dilemma, as Steedman sees it, is that these putative universals are pulling the theory of grammar in opposite directions. On the one hand, while coordination is typically analyzed in terms of surface structure and purely concatenative rules, additional mechanisms such as deletion are required to account for examples of gapping. Binding, on the other hand, is typically analyzed in terms of an entirely different level of representation, independent of surface structure, at which obliqueness is represented directly, and to which nonconcatenative rules such as movement supposedly apply.

The CCG way out of the dilemma is as follows. Firstly, an unorthodox view of constituenthood is taken, whereby strings such as *give a policeman* and *a policeman a flower* are grammatical constituents, without the need for rules of deletion (or their equivalent). Secondly, following Bach and Partee (1980), a theory of binding is constructed in terms of the predicate-argument structure. This is the essence of the redistribution of the responsibilities alluded to above.

The particular variety of CCG that is adopted has the following two principles as "central theoretical assumptions." The *principle of adjacency* states that combinatory rules may apply to finitely many phonologically realized string-adjacent entities, and serves to rule out theoretical constructs such as empty categories. The *principle of categorial government* states that both bounded and unbounded syntactic dependencies are entirely determined by lexical syntactic types, which specify semantic valency and canonical constituent order, and nothing else. This amounts to a requirement that all information regarding the potential for syntactic dependencies is projected from the lexicon.

Chapter 2 provides an introduction to categorial grammar (CG), including feature unification for agreement and the inclusion of semantic interpretations within categories. Lambda abstraction is introduced as a notation for representing semantic interpretations and semantic composition is constrained by the *principle of combinatory transparency*. This principle requires that the syntactic form of a combination rule completely determines its semantic form. The generalization of CG to CCG consists of the addition of rule schemata for coordination, composition, type-raising, and substitution. The introduction to CG is rather terse and a reader with no previous knowledge of the subject matter would find it a struggle. While it is clearly not the role of a monograph such as this one to provide tutorial material, CG is not a field that is well served with elementary texts. If it is Steedman's intention that the ideas contained in the book should have an influence beyond the CG community, then a little more attention to this section would have helped.

Chapter 3, which is the core of the book, examines the consequences of the CCG framework to unbounded dependencies including relatives, pied-piping, strong crossover, subject/object asymmetries, asymmetric islands, and parasitic gaps. Particular attention is paid to asymmetries that have previously been argued to stem from the empty category principle (ECP) and it is shown that explanations for these "come for free" in CCG.

The final chapter presents the overall architecture implicit in the theory and discusses CCG in relation to two different versions of minimalism. Steedman argues, convincingly, that his theory is minimalist in the Chomskyan sense because his surface structures are dispensable: all the information relevant to a category is explicit in the category itself and no rule ever needs to know how a category it is applied to was derived. A similar argument is made for Montagovian minimalism based on the dispensability of predicate-argument structure. This is justified on the basis that predicate-argument structure is transparent to model-theoretic interpretation. Presumably, these dispensable levels of representation were introduced only to ease the exposition, but Steedman does not comment on this.

Significantly, there is no discussion of quantification and quantifier scope, beyond a passing reference to Park (1995, 1996). This is significant because it is not obvious that the theory can be extended to include an account of quantifier scope without an appeal to additional representational levels. A full account is clearly beyond the scope of the work, but this reviewer would have liked some reassurance that one is possible.

The prose style is for the most part relaxed and readable and the text is relatively free from typographical errors. The ideas contained in this book are important ones and relevant to anyone interested in syntax, including linguists, computational linguists, and those working in natural language processing whose concerns are of a more engineering nature. The format and presentation of the book, however, orient it more towards the linguist than the computer scientist. Chapter 3, in particular, assumes a fair amount of familiarity with the relevant linguistic literature. For this reason I think it is fair to say that the book will be less widely read than it ought to be.

References

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