Abstract:
A framework for the description of syntactic structures of free word order languages is proposed, based on combination of intuitions underlying immediate constituent description, dependency description and communicative dynamism. The combined approach is compared to its sources and shown superior in descriptive power, esp. in the area of free intermixing of (any number of) adjuncts with complements and in coordination. Close resemblance to two other recent approaches is pointed out.

1. Syntactic Structures for Free Word Order
The absolute majority of current linguistic frameworks (explicitly or implicitly) an infinite rule set. Just on the contrary, the approach results in a drastic simplification of the number and shape of rules needed: one gross rule scheme (2) is sufficient for the whole grammar:

(2) what is to be expanded

what is to be expanded NOW

what is to be expanded LATER

In this scheme, the second constituent on the right hand side is always the phrasal head; according to the nature of the left daughter, the rule set can be further factorized into the following subsets reflecting the classical linguistic wisdom: rules expanding the lexical head, rules expanding a complement, rules expanding a free adjunct, rules expanding an extraposed constituent, rules expanding a member of a coordinated structure, rules expanding minor categories (coordinations, particles etc.). Such a division is im-

SYNTACTIC DESCRIPTION OF FREE WORD ORDER LANGUAGES
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In the unmarked case, the scale of communicative dynamism allows for splitting the sentence or any of its parts on the level of the "main" constituents (such as Subject, Object, different verbal Adjuncts etc.) at any moment into two parts, the first consisting of the constituent being processed (uttered, expanded) at the very moment, i.e. the currently least dynamic constituent, and the second one consisting of the "rest" of the sentence, i.e. of all the constituents more dynamic than the currently processed one. This results in a non-transformational account of syntactic structures, in the form of binary right-branching trees (if the division sketched above is broadened to all constituent types used in the description). An example of the structure for the notorious sentence "John loves Mary" is given in (1). (Mind the rightmost "Rest_S" nonterminal dominating an empty string; "nothing more is to be uttered" in the sentence, "nothing is more dynamic" than "Mary").
important not only because it brings along some more purity and perspicuity, but also because it allows for a straightforward implementation of different facture inheritance principles of the framework (such as the Head Feature Principle, Subcategorization Principle etc.) in the computer variant of the grammar; on a reasonable formal notation of the grammar rules allowing marking off the type of the property of the rule itself. It is possible to bound the application of the principles to the whole rule types rather than to each rule separately, as the case often is in many current parsers (e.g., for a head daughter in a rule, it is not necessary to stipulate explicitly the sharing of its head features with the mother, since this is provided for by listing the rule in the class of head expanding rules).

2. Relation to Other Syntactic Frameworks

The proposed structures might seem rather unconventional at first glance; however, their relation to structures used in more usual syntactic frameworks can be shown to be quite straightforward in simple cases. All what is needed to obtain dependency trees is to factorize the set of nodes of the described structures by all bar projections of a single terminal node. An X-structure can be obtained by factorizing the set of nodes by projections of the same bar-level of a single terminal node.

In more complicated cases, however, the factorizations sketched above cannot be performed. Exactly in these cases, the structures proposed rank better in describing at least the following phenomena of FWOLs:

- in relation to dependency syntax (traditionally used for description of FWOLs), first of all in describing coordination, but also the so-called non-projective constructions (e.g., unbounded dependencies) as well as cases where contact position of certain words or constituents is required or positions are to be strictly fixed even in FWOLs (e.g., the Waxner's position of clitics), which both is difficult to achieve in dependency descriptions if non-projective constructions are allowed to occur since these interfere with the "basic" projective ordering generated.

- in relation to standard variants of X-syntax, the approach adopted solves the problems with the position of subjects, with free intermixing of complements and adjuncts and, in addition, it is able to cope with certain cases of "heavy" coordination (see below) on a context-free basis.

3. Subcategorization and Coordination

Generally speaking, the intuitions (as opposed to the formalism) standing behind the framework are very close to (if not the same as) those supporting dependency approaches (certainly more so than to the intuitions of the majority of current immediate constituent approaches, e.g., the nonexistence of the "VP/VP" division of a sentence), but the structures developed for the formal incarnation of these intuitions have by far more descriptive power than the standard formalizations proposed for the dependency approaches. This extra power (even in comparison with the standard X-approaches) stems mainly from the increased number of nonterminal symbols; the greater number of nonterminals allows for a more subtle structuring of the terminal string.

The crucial point of this refinement of structural information is the one concerning subcategorization of phrases. In accordance with the treatment of subcategorization in HPSG and other frameworks, subcategorization can be informally viewed as the number and shape of constituents to be added to the VP to become a sentence: thus, a sentence is just an alias for a VP with empty subcategorization. In the example (3), it is important to notice the "sharing" of the subcategorization requirements (depicted schematically as sets of subcategorized for elements associated with the nonterminal nodes of the structure) between the lexical head of the sentence (the verb) and its rightmost phrasal projection, as well as the stepwise right-to-left reduction of the subcategorization requirements of the VP's, and also the fact that the expansion of a lexical head or a free adjunct does not affect the subcategorization.

As mentioned above, this "extra descriptive power" can be made use of for description of (among other) certain "node raising" coordinations. The instances we have in mind are "Right Node Raising" and "Across the Board" coordinations exemplified in (4) and (5), respectively.

(4) Mary baked and John ate an apple pie.
(5) the pie Mary baked and John ate

Before presenting the treatment proper, two matters have to be pointed out:

- first, in FWOLs "Right Node Raising" and "Across the Board" are exactly the same cases of coordinative constructions (due to the free-word-order, the position of the "extracted" constituent plays no syntactic role)

- second, the grammaticality of other cases of coordination can be order dependent, even in FWOLs: typical case is "Gapping" i.e., the contrast shown for English in (6a,b) but holding also in (at least) Bulgarian, Czech, Polish, Russian and Slovak, somewhat unclear is the situation with "Non- Constituent Coordination", where speakers of the abovementioned languages seem to have different opinions about the grammaticality of the respective counterparts of (7).b.

(6) a. John loves Mary and Jim Sue.
   b. * Jim Sue and John loves Mary.
(7) a. John gave a book to Mary and a bunch of flowers to Sue.
   b. * A book to Mary and a bunch of flowers to Sue John gave.

This corroborates the view that (6a,7a) are instances of some extrapragmatic communicative processes (i.e., processes not reflected in the grammar of the language - such as the tendency to avoid uttering identical parts of coordinated structures etc.) rather than true cases of "coordinated predication" which seems to be the case with "Right Node Raising" and "Across the Board".

The treatment of "Right Node Raising" and "Across the Board" relies fully on the refinement of subcategorization into the increased number of nodes of the structure, but on the other hand it does not require any augmentation of the coordination mechanisms of the framework, the only coordination rule being the "coordination of likes". The approach even allows for description of constructions where "Right Node Raising" and "Across the Board" cooccur. The structure assigned to such cases is given in (8) (the terminal string of which is quite probably no good English, but translations into the FWOLs tested are considered fully acceptable).
The framework presented in this paper was created in the course of preparatory work for an implementation of a parser for Bulgarian, a free-word-order language from the Slavonic group. The main idea standing behind the structures as presented was merging the insights concerning communicative dynamics contained in the works of linguists of the Prague School with the intuitions underlying the dependency descriptions of language, and implementing the whole in an immediate constituent based formalism. The result might seem rather unsuiting in many respects, but the deviations contained can be sanctioned by at least two remarkable advantages of the framework proposed over the more standard approaches:

1. From the theoretical side, the use of increased number of nonterminals: symbols makes the framework superior in descriptive (and, let us hope, also explanatory) adequacy concerning such phenomena as coordination and the so-called "non-projective" constructions in FGMOLs, while simultaneously keeping the generative power on the context-free level (for space limitations, no examples of the non-projective constructions were given, but due to the presence of nonterminals in the structures, they can be treated in the way broadly used in other context-free based immediate constituent approaches, e.g., by the "SLASH" mechanism of GPSG or SPoG).

2. From a more practical viewpoint, while the overall approach allows for keeping virtually all linguistic intuitions contained in the dependency approaches traditionally used for the description of FGMOLs, the formalization adopted allows for using a generative grammar (i.e., a set of declaratively stated rewriting rules) for the description of the language, which in turn guarantees a clear correspondence between the structures of the language and the mechanism that generated them. This correspondence is never so straightforward in "pure" dependency approaches which, as a rule, use some exclusively procedural machinery rather remote to the structures that are to be generated or parsed by it (cf., the framework described in Aprewyan et al.,1989 for implementation of the Meaning-Text model or the "transducing automata" of Functional Generative Description described in Sag, 1969). Needless to add, the possibility of keeping the linguistic information in a separated declarative format (such as a set of rewriting rules) makes the job of creating and, mainly, debugging the generator/parser easier (though, of course, not at all easy).

Partly as also an indirect support for the formalism presented, it is further necessary to say that structures in many respects similar were proposed independently in (Uszkoreit,1986) for the description of "complex fronting" in verb-final German clauses and in (Gunji,1987) in the framework of JPSG (which, however, advocates the existence of the "NP/VP" division of the sentence and also, similarly to Uszkoreit, heavily relies on the fact that Japanese is a verb-final language), What is interesting and, hopefully, also important to observe is the fact that this happened in spite of the fact that both Uszkoreit and Gunji started from intuitions different from the ones incorporated in the presented framework (and also different from each other) and also at description of phenomena often marginal, remote or even nonexistent in the languages on the base of which the currently presented framework was developed and for the description of which it is intended to serve.

4. Conclusions

The framework presented in this paper was created in the course of preparatory work for an implementation of a parser for Bulgarian, a free-word-order language from the Slavonic group. The main idea standing behind the structures as presented was merging the insights concerning communicative dynamics contained in the works of linguists of the Prague School with the intuitions underlying the dependency descriptions of language, and implementing the whole in an immediate constituent based formalism. The result might seem rather unsuiting in many respects, but the deviations contained can be sanctioned by at least two remarkable advantages of the framework proposed over the more standard approaches:

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