Postscript

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In this postscript I wish to suggest to the reader, who in most cases will probably be a linguist, a certain approach to the present monograph by L. Nebeský, concerning in particular its linguistic relevance. Hereby I hope to elucidate the fact that an essentially mathematical work is being published in a series of philological monographs, which some ten years ago was scarcely conceivable. (After all, in an era of wide collaboration between formerly self-contained scientific disciplines, an era which also gives rise to new borderline disciplines, a proper amount of broadmindedness which makes the publishing of various kinds of "experimental" works possible is not out of place.)

The work was originally intended as a contribution to deeper knowledge of the so-called dependency conception in syntax. We shall see, however, that it may be of more general significance. Having touched upon some problems of the formal study of the dependency conception, I shall characterize, in 1, the author's general approach to such a study in comparison with other possible approaches, then I shall survey and discuss the results of the work, first, in 2, those whose linguistic significance is immediate, and then, in 3, some others. If need be I shall comment on general questions of the relationship between mathematics and linguistics *quà* empirical science.

1. In contradistinction to the immediate constituent conception, which because of its distributionalist and antisemantical origin within American descriptivism permitted a relatively easy formal-

ization (Chomsky 59, 147, Postal 64, ch. 3), the formal reconstruction of the dependency conception meets with many more obstacles.[1]) It has come to be known in modern Western linguistics (regarded from the standpoint of this country) only through the fundamental book by Tesnière (59) and from the automatic syntactic analysis of Russian by Harper and Hays (60) but it originated and has been cultivated in Slavonic countries throughout a long tradition of syntactical scholarship, in a setting with a different standard of precision in presenting the results of research. Here syntax has always been conceived of as a study of sentence meaning (cf. Bauer 52) -mostly oriented explicitly or implicitly towards sentence parsing as practised at schools- and only recently have the semantic and formally combinatorial aspects of sentence structure begun to be distinguished (Dokulil-Daneš 58, Hausenblas 58). Consequently, it is quite natural that the dependency conception began to be formalized later and in a more difficult way than the immediate constituent conception, and that its further substantial elaboration is accompanied by independent attempts at its formal clarification, and, conversely, attempts at its formalization give impulses to its further substantial elaboration (cf. Daneš 64, Sgall 67 and Shaumyan — Soboleva 63).

In principle it is clear that dependency relation as used by grammarians reflects, in a not yet fully understood manner, purely combinatorial (distributional), morphological and semantical facts about word forms (Revzin 67). (Referring to the so-called linguistic intuition in the case of dependency relation seems to be unjustifiable. If anything is intuitively clear in this field of language experience, it is a certain interdependency relation (Figure 1). Next, even if any claim were to be made for the intuitive clearness of the dependency relation (cf. Mel'chuk 64, 18), we would not be relieved of the duty of explaining this intuitive clearness.) It goes without saying that a formal reconstruction of the dependency conception would be incomplete with the exclusion of sentence semantics.

Nebeský is not the first mathematician to be interested in the dependency conception, especially in its central notion of dependency.

[1]) We shall always differentiate between an informal syntactical conception and its formalizations, called theories (the latter item being, in turn, opposed to concrete grammars constructed in accordance with a theory).

He uses, however, a procedure different from that used so far. He is not trying to explicate the dependency relation, which is current in the so-called analytical trend of algebraic linguistics (Nebeský 62, Revzin 63, Nebeský 65, Marcus 67, Revzin 67), nor does he treat it in the way prevailing at present in the specifying (generative or recognition) trend, i.e. simply by taking it as one of the so-called

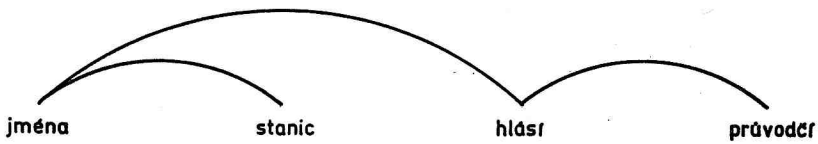

Figure 1. ("The names of the stops are announced by the conductor".)

formal universals (Gaifman 65, Fitialov 62, cf. Katz 67, 127), but having observed the role played in the dependency conception by the notion of projective tree,[2]) he has investigated, in an abstract mathematical manner, the main components of this rather involved mathematical notion, namely the tree, the root and the condition of projectivity in their connexions. A programmatic stress is placed on the due discerning of the first two components.

When one wishes to give a linguistic appraisal of Nebeský's results one is faced with a situation different from the more usual one where one is putting concrete questions stimulated by empirical research to mathematics. In the latter, an *a priori* application of mathematics, we are concerned, in a sense, with translating linguistic problems into problems of mathematics and solving them as such (cf. Karush 63, Kemeny-Snell 63, Čulík 65, Čulík 67a). Of course, different types of situations may arise: a corresponding mathematical system may have already been developed or it may still have to be set up; the given problem may already have been solved or it may be being tackled for the first time; the problem may be solvable or

[2]) If we compare the rooted tree diagrams used by various authors we would find some differences among them caused by different ways of simplifying the complicated linguistic reality or by problems so far unsolved. However, in view of solution proposed by Shreider (64) for integrating the coordination in the framework of dependency conception we may not give an otherwise obligatory warning that our discussion does not apply to coordination.