Grammar in 3D: on linguistic theory design
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SUMMARY IN ENGLISH

In this dissertation, I have established a set of parameters that can be used to analyze and compare the architectural design of linguistic theories. I have called these parameters the 3 Ds: Distribution, Derivation and Direction. These 3 Ds are features that determine what the architecture of a grammar looks like and, subsequently, how the grammar represents various linguistic phenomena – whether mismatches occur or empty categories are used in a given grammatical framework.

The first D or architectural dimension, Distribution, is constituted by the number and type of formation rules; the number and type of dependent and independent levels of representation; and the number and type of uni- and bi-directional intra- and inter-level mapping processes. The second D or architectural feature, Derivation, concerns the order in which one level or sub-level is derived from another level or sub-level. A model of grammar that lacks derivation is a model of the autonomous type – there is no relation of derivation between the various representational strata. Whether a model of grammar is derivational or not is determined by various factors. The first factor is the number and type of source, target, source- and target and all-first source levels (compulsorily initial levels of computation).

This in turn determines the number and type of interfaces, and whether these are transparent or flexible, whether the relation between different representational strata is one-to-one and isomorphic or whether representations at different strata are mismatching. Finally, the third D or architectural dimension, Directionality, is the direction in which mapping processes take place between the various (sub)levels of a model of grammar and whether this mimics the goal of a given grammar (to generate and/or analyze language) and the processes involved in the actual generation and analysis of language.

I have further used the 3 Ds and their architectural sub-
features to analyze three grammatical frameworks: Traditional
1993, 1995); the Parallel Architecture (Jackendoff 1997, 1999,
and Functional Discourse Grammar (Hengeveld 2004,
Mackenzie & Gómez-González 2005, Hengeveld & Mackenzie
portray different architectural pictures and thus represent
different approaches to the 3 Ds. Their analysis and comparison
according to the 3Ds has allowed me to state a default relation
between the way in which a given grammatical formalism
approaches distributional, derivational and directional features.
Not all combinations of architectural features are possible when
designing a grammar. In the default case scenario, a consistent
architectural picture arises through a domino effect of
architectural features classified as Distribution, Derivationality
and Directionality all across the board. Two main, contrasting
pictures arise. In the presence of independent formation rules
and sets of primitives for each level of representation, levels
tend to be autonomous—they are potential sources and targets of
linguistic computation. This in turn leads to all types of bi-
directional interfaces. A model of these characteristics tends to
show flexible interfaces that allow for mismatches in the
representation of various strata: there are no derivational
processes by which levels are obtained and inter-level uni-
directionality is kept to a minimum. This architectural scenario
has been stated in the workings of the Parallel Architecture.

Contrarily, in the presence of fewer sets of independent
formation rules and primitives than levels of representation,
some levels tend to be dependent upon others and some
interfaces are only uni-directional. Such a model tends to show
transparent interfaces that maintain homomorphic relations
between the various levels: there are derivational processes by
which levels are obtained. In the absence of derivations between
the various strata and levels that are both source and target
strata, mappings tend to take place in a parallel fashion and with
no pre-determined sequence. This architectural scenario has been stated in **Generative Grammar**.

A hybrid approach to the 3D features is however to be found in models of grammar which contravene the default combination of distributional, derivational and directional features. A violation of the domino effect between the 3 Ds can take place if a model of grammar displays distributional, derivational and directional features that are usually identified with opposing architectural tendencies. If distributional features correspond to those explained in the first case scenario (of an autonomous model of grammar) but directional features correspond to those explained in the second case scenario (a strongly directional model of grammar), then the model’s approach to derivation will also be contradictory allowing for inter-level mismatches, on the one hand (typical of an autonomous model), and a specific sequence for mapping processes (typical of a derivational model), on the other. This architectural scenario has been stated in **Functional Discourse Grammar**.

I have further examined the relation between the architectural tenets of a given theory of language according to the 3Ds, on the one hand, and the use of **empty categories**, on the other. Empty categories are representations of posited grammatical elements that have no actual overt realization and that can therefore arise in non-default mappings between meaning and form - in violations of **interface transparency**. A violation of meaning-form transparency can take different forms. Syntax-semantics isomorphism can be infringed upon if more is meant and understood than is actually said such that semantics is richer than syntax (a quantitative mismatch). This can be seen in the following phenomena: **understood arguments; sluicing; small clauses;** and **interjections**. The default transparent syntax-semantics interface can also be infringed upon if the linearity of meant and understood linguistic material does not correspond with the linearity of syntactic material as happens in **raising** (whereby a semantic
argument in the embedded clause corresponds to a syntactic phrase in the matrix clause; a distributional mismatch). Syntax-semantics transparency can be further violated both quantitatively and qualitatively in linguistic phenomena such as control (whereby one syntactic element in the matrix clause corresponds to two different semantic arguments, one in the matrix and one in the embedded clause; quantitative and distributional mismatches). I have finally discussed a different type of violation of syntax-semantics interface transparency: pseudo-coordination (syntactic coordination expressing semantic subordination) and pseudo-subordination (syntactic subordination expressing semantic coordination), both of which contravene the default association that normally takes place between syntax and semantics.

While examining the relation between the 3Ds and empty categories for Generative Grammar, the Parallel Architecture and Functional Discourse Grammar, I have presented empty categories as the antithesis of representational mismatches. I have classified mismatches according to two main, crosscutting parameters: inter-level vs. intra-level mismatches (mismatches between different levels vs. mismatches within one level); and quantitative vs. qualitative mismatches (mismatches in the number of elements at different levels vs. mismatches between the expected and the actual type of elements at different levels).

The violations of the transparency of interfaces mentioned above can be solved in a representational formalism in two different ways: by maintaining the mismatch in the representations or by avoiding the representational mismatch by e.g. introducing an empty category at a formal level to counterpart the richer contribution of semantics. In general terms, a model of grammar whose distributional, derivational and directional features belong to the group exemplified by Generative Grammar will tend to use empty categories to avoid representational mismatches while a model of grammar whose architecture corresponds to the Group exemplified by the
Parallel Architecture will tend to do the opposite, i.e. make use of representational mismatches in order to avoid mismatches in the representation of the various phenomena that violate interface transparency. Since the domino effect between the 3Ds can be infringed upon such that conflicting distributional, derivational and directional features can be taken up in a single grammatical formalism, a model of language that presents a non-default combination of the 3Ds such as Functional Discourse Grammar can show a mixed approach to the use of empty categories and mismatches.

This thesis will be of interest to linguists working on generative frameworks, on grammars of the autonomous type and on functional models of grammar. It is also intended for those with an interest for the architecture of grammar in general and the metatheoretical comparison of grammatical frameworks, on empty categories and on mismatches.