

# Structure Building in Syntax and Phonology

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I adopt a modular approach to linguistics for both methodological reasons (it will force us to be more precise, hence to encounter problems explicitly) and for empirical reasons (the modular research strategy has been quite successful empirically so far, although it is of course not completely without problems).

I argue that syntax and phonology are to a large extent determined by modules specific to these domains (syntactic module and phonological module, respectively). However, seen at a meta-level they are both based on the same general design. I will briefly discuss this shared general design, which however remains at a very abstract level and is not the main focus of this contribution.

Apart from this shared design at a meta-level, I claim that these modules do not share anything.

Do phonology and syntax really share nothing else? I believe they do share other things but what they share is not part of the domain-specific modules but of different domain-independent modules. In particular, I claim that both use an operation of structure building, which is neither part of the syntactic module (pace Chomsky's (1995) 'Merge') nor of the phonological module. I claim that the structure building operation is part of the short term memory component where all structures must be constructed. I show empirical evidence for this and its applicability in both syntax and phonology and an explicit model of short term memory that accounts for this evidence. The evidence for phonology basically consists of the fact that an arbitrary list of more than 7 phonemes is difficult to recall after short exposure, while the same phonemes in an order that can be analysed as a sequence of syllables is recalled much easier. The same holds in syntax if we replace phonemes by words and syllables by phrases.

The structure building operation enables, in special cases, recursion. I argue that recursion occurs both in syntax (which is uncontroversial) and in some domains in phonology (pace Samuels (2009), Scheer (2013) and others). For example, recursion occurs in metrical trees (which, I claim, are required independently of syntactic structures), but not in describing syllable structure. I account for the absence of recursion in describing syllable structure by independently required phonological combinatorial principles and rules.

The methodological value of the modular approach becomes very clear if one assumes, as I do, strict encapsulation of these modules, i.e. the syntactic module has no access to the properties defined in the phonological module and vice versa, unless an explicit interface between the modules is defined. This makes the prediction that syntactic rules will never be conditioned by phonological properties (which seems to be a correct prediction), and vice-versa, that phonological rules will never be conditioned by morphosyntactic properties. This latter prediction is not obviously true, and many phonological rules in the literature refer to morphosyntactic properties (e.g. part of speech). If time permits I can illustrate this with some examples but I can of course not address all phenomena involved here: it will require a complete revision of what is sometimes called the morphophonological component in SPE. I will show for some exemplary phenomena that they can be described in accordance with strict encapsulation by explicitly specifying the interface between syntactic rules and elements on the one hand and phonological rules and elements on the other

hand, based on a formalism originally developed for a completely different goal (the mapping between syntax and semantics) in the M-Grammar framework (Rosetta, 1993).

For example, the simple allomorphy rule for Dutch past tense cannot be formulated as in (1):

- (1)
- a. [+past] -> /tə/ / [-voiced] \_\_\_\_
  - b. [+past] -> /də/

because the context of the formative with the morphosyntactic feature *past* is formulated in terms of a phonological features and units. Instead the rule in the syntactic module that introduces [+past] as a morpheme on a verb must be associated to a rule in the phonological module that applies to the phonological representation of the verb and adds /tə/ if the preceding phoneme is [-voiced], and /də/ elsewhere.

## References

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