

Word-Phonotactics: Domains and Principles  
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The paper addresses the two main questions that arise with respect to the study of the phonotactics of a language: (i) where do phonotactic constraints hold and (ii) what are the principles or constraints governing co-occurrence restrictions?

Based on various phonological criteria, e.g. phonological processes, phonotactic restrictions, accent assignment, etc., I argue that besides the word, the stem (not the syllable, as suggested in previous studies) should be recognised as a phonological domain. Since the importance of the morphological constituency of the word is recognised, morphological typology is considered next. I offer a revised version of the morphological classification of languages, which serves as a background for the discussion of phonological principles: the Obligatory Contour Principle (OCP) and the Sonority Sequencing Principle (SSP).

In line with Sapir's classification, in which paradigmatic and syntagmatic aspects of language intersect, I offer a classification with a primary focus on the relation between lexicon and grammar within a language. The basic idea, which also underlies Sapir's classification, is that all languages need to express radical concepts and relational ideas and what languages choose to adopt is a question of tendency. The way morphemes combine in a word directly bears on the problem of their formal independence. Formal independence of a word directly relates to the phonotactic organisation of a word. Therefore, formal characteristics of the sub-constituents of a word are the main parameter of the classification. Three main groups of languages can be distinguished:

- (1) a) Lexical
- b) Lexico-grammatical
- c) Grammatical

Word constructions in these languages are as follows:

- (2) a) Lexical                   #lexical morpheme# = #word#  
                                      #grammatical morpheme# = #word#
- b) Lexico-grammatical    #lexical morpheme# = #word#  
                                      #grammatical morpheme# ≠ #word#
- c) Grammatical            #lexical morpheme# ≠ #word#  
                                      #grammatical morpheme# ≠ #word#

The formal independence of lexical and grammatical morphemes in these three types of languages is summarised in (3).

(3)

Type of morpheme Type of language	Lexical morphemes	Grammatical morphemes
Lexical	Independent	Independent
Lexico-grammatical	Independent	Dependent
Grammatical	Dependent	Dependent

Zubkova (1990) has proposed that phonotactic patterns, specifically the consonantal constituency of CVC words, vary depending on language type. She has studied consonant co-occurrence restrictions in C<sub>1</sub>VC<sub>2</sub> words in three languages: Vietnamese (Lexical), Turkish (Lexico-grammatical) and Russian (Grammatical). There are gradual patterns to be observed in these languages. Vietnamese and Turkish are

similar in that lexical morphemes are independent in both languages, they coincide with a word and are characterised by rising sonority. In Russian, lexical morphemes can have a falling sonority, perhaps because they very rarely occur independently. Russian has rich prefixing and suffixing morphology. On the other hand, consonant co-occurrence restrictions in these languages show that Vietnamese stands opposed to Turkish and Russian, in that consonants within words in Vietnamese are highly contrastive (three parameters), while in Turkish and Russian consonants contrast only on one parameter. The greater the contrast is between the  $C_1$  and  $C_2$ , the fewer the co-occurrence restrictions between them. Thus Vietnamese, unlike Turkish and Russian, does not have co-occurrence restrictions within a lexical morpheme/word. I think there should be a reason for this asymmetry. The answer to the puzzle could be as follows: lexical morphemes must have formal autonomy in order to be recognisable. The preference for lexical morpheme to retain its form is attested cross-linguistically both by synchronic processes and by language change. Thus, the principle at work in all of these languages is the same: to maintain the formal autonomy of lexical morphemes. The strategy employed to achieve this goal in Vietnamese differs from those employed in Turkish and Russian.

In Vietnamese, in order to achieve the autonomy, the so-called boundary signals are used by way of assigning different sound sets to  $C_1$  and  $C_2$ , respectively. Thus, external means are used in Vietnamese; while in Turkish and Russian – because both languages have affixation (suffixation in Turkish and prefixation and suffixation in Russian) – co-occurrence restrictions are employed in order to achieve formal autonomy of lexical morphemes by internal means. These segmental patterns might be comparable with suprasegmental means of demarcation (boundary signals), e.g. a fixed word accent can be considered as an external means which identifies the beginning or the end of a word unequivocally; on the other hand, vowel harmony might be considered as an internal means of word demarcation.

In terms of the phonological make-up of grammatical and lexical morphemes it has been shown that independent though these morphemes are, they are similar in their phonological composition. The pattern gradually changes from Lexical to Grammatical languages. In the latter type grammatical morphemes have only a subset of phonemes occurring in lexical morphemes.

Another point which is related to the interplay between the morphological typology and phonotactics concerns the correlation between lexical and grammatical morphemes in terms of their length (calculated in terms of the number of syllables). The difference between the lexical and grammatical morphemes in terms of length increases from Lexico-grammatical to the Grammatical languages.

To conclude, the autonomy of lexical and grammatical morphemes varies in Lexical, Lexico-grammatical and Grammatical languages, and affects the phonological composition of a word.

The traditional formulation of the OCP is assumed and substantiated by additional language data. I propose a re-examination of the SSP by defining this principle at the stem/word domain, instead of the syllable domain, as was claimed in previous studies. In addition, unification of the SSP with a closely related constraint, the Syllable Contact Law (SCL), is suggested. In order to substantiate this proposal, the typological data provided by Zubkova (1990) are discussed. The generalisations illustrate that both the SSP and the SCL function within a stem/word domain and reflect the rising and falling sonority pattern of a word. Finally, it is suggested that the OCP, the SSP and the SCL are different instantiations of the Balancing Principle (BP). All the principles imply the universal principles of ease of articulation and perception. They are defined on a single domain, the stem or the word, depending on the language type.

The principal message of this paper is that the word has hierarchical structure, which includes the stem as a phonological domain occupying a place between the word domain and the segment. Such representation of the word suggests that word phonotactics should be viewed simultaneously in three dimensions: meaning, form and structure.