

PHONOLOGICAL THEORY AND SECOND LANGUAGE ACQUISITION

- **Distinctive feature theory (Jakobson 1962)**
 - All sounds are composed of a limited set of binary phonetic features such as [voiced].
 - Phonemes are convenient abbreviations for bundles of distinctive features.
- **Intrinsic Rule ordering (Koutsoudas, Sanders, & Knoll 1974)**
 - Phonological rules apply in the order which maximizes the number of forms to which they apply.
 - If your grammar has a pair of rules in the ‘wrong’ order, your grammar is wrong.
- **Markedness (Chomsky & Halle 1968)**
 - Every distinctive feature has a normal, unmarked value and an abnormal, marked one, depending on context.
 - Only the marked ones appear in the lexicon. (But see Henderson 1976.)
 - The unmarked ones are easier to learn.
- **Natural phonology (Stampe 1979)**
 - We are born knowing all the phonological processes: final devoicing, intervocalic voicing, assimilation, etc.
 - Learning our native language is a process of learning to suppress the processes which are absent from it.
- **Autosegmental phonology (Goldsmith 1976)**
 - Some distinctive features are properties not of individual segmental sounds, but of syllables, morphemes, words, on their own layer of representation.
 - The Obligatory Contour Principle prohibits two of the same kind of phenomena in a row; if you need two vowels in a row with the same features, then they are mapped onto one long vowel.
- **Natural generative phonology (Hooper 1976)**
 - No underlying representation is permitted which is composed of segments not present in at least one (weak version)/each (strong version) surface form. Example: *derive* – *derivation* must come from /derajv/ under the weak version; under the strong version, since /ε/ and /aj/ are not present in all allomorphs, the obvious kinship of the two words has to be shown in some way other than developing each from one underlying form.
 - Historically related forms which are not thus derivable are shown to be related with ‘via-rules’. This, while at first glance seems quite counterintuitive to a linguist, may be the way we actually acquire these forms as children. I’d be willing to bet, though, that at some point we do develop rules—not just linguists, but regular people too.
- **Lexical Phonology (Kiparsky 1982)**
 - Affixation and word-building are not the same kind of phonological processes as regular assimilation, weakening, coarticulation, etc., though there may be similarity: (a) race + ial → [reɪʃəl], (b) miss + you (→) [mɪʃjə].
 - Unexceptional, learned processes such as (a) belong in the lexicon, along with the morphemes and words.
- **Underspecification (Archangeli 1984)**
 - Predictable feature values must be filled in by rule, not marked in the lexicon.
 - (Radical Underspecification) only one value is to be shown for each feature (see Markedness)
- **Feature geometry (Clements 1985)**
 - Distinctive features are not just unordered bundles; they come in groups or nodes such as Laryngeal ([±voice], [±spread glottis]), Place ([Labial], [Coronal], [Dorsal]), and Manner ([±continuant], [nasal]).
 - Phonological processes can often be represented as the assimilation by one segment of another’s Place features, or as the delinking of a segment from all of its oral features; e.g. the Japanese process [p] → [h] can be represented as a loss of the Place node.
- **Metrical phonology (Goldsmith 1990)**
 - Words are made up of feet, which consist of one Strong and one or more Weak syllables and can be represented as trees or on a grid.
 - Stress is a property of syllables, not of individual segments.
- **Optimality theory (Prince & Smolensky 1993)**
 - The phonology of a language is best represented as the interaction of various constraints rather than as a list of ordered processes. Constraints are variably-applied admonitions such as:

- ONS: Syllables should have onsets.
 - NUC: Syllables should (must?) have nuclei.
 - NOCOD: Syllables shouldn't have codas.
 - VOCNUC: Nuclei should be vowels. (Cf. 'hmp', which appears to have a syllabic m as its nucleus.)
 - NOCOMPLEX: Each syllable position should be filled with only one segment.
 - Σ SON: The margins of syllables are less sonorous than their peaks.
 - PARSE: All underlying segments should appear in surface structure. (I think this is the same as Hooper's 'weak version' of the Natural Generative Phonology theory described above.)
 - FILL: Syllable positions are filled with segmental material.
- All languages have the same constraints, but in different orders. Chinese has (ONS) and (NOCOD) very highly ranked; English has them much lower ranked. But English ranks (VOCNUC) higher than Czech, which allows vowelless words, and Σ SON higher than Pashto, which allows syllable-initial clusters like /ɫ/.
 - Given the constraints NOCOD and NOCOMPLEX, it is possible to see how their ranking differs in Spanish and Japanese by comparing how speakers of these languages deal with an English word like school [skul], which violates NOCOD and NOCOMPLEX. Spanish speakers will tend to pronounce it with a prothetic vowel, [ɛs'kul], while Japanese speakers will tend to insert two epenthetic vowels [suu 'ku.lu]. This shows that for Spanish, Σ SON © NOCOMPLEX © NOCOD. This means that the worst thing, from the point of view of a Spanish speaker, would be to have a syllable onset in which the first segment [s] is more sonorous than the second [t]; the next worse thing would be to have a complex onset (Spanish does allow some stop+liquid or fricative+liquid onsets), and the least bad thing would be to have a coda, since Spanish does allow some codas. For Japanese, the ranking would be NOCOMPLEX © NOCOD; Σ SON is unranked, being precluded by the first two constraints. NOCOMPLEX is top-ranked in Japanese: the worst thing for a Japanese speaker is to have more than one consonant in a row. The next worse thing is to have a coda; Japanese does not allow codas. The way to avoid complex onsets is to stick a vowel in between, as shown. And the way to avoid codas is to glue another vowel on the end. Optimality Theory uses tableaux to show rankings:

Input [skul]		Spanish		Input [skul]		Japanese	
	Σ SON	NOCOMPLEX	NOCOD		NOCOD	NOCOMPLEX	Σ SON
skul	*!			skul	*!	*!	*
ɛs.kul			*	suu 'ku.lu			

Each language inserts its default vowel: [ɛ] for Spanish, [u] for Japanese. (Weinberger 1997)

- Acquiring the syllable structure of a second language can be described as the reordering, or demotion, of the constraints of one's native language. A Japanese speaker learning English can learn to demote NOCOD; perhaps a first stage would be to demote it below NOCOMPLEX, allowing the learner to say [suu 'ku.l] without the final [u]. Since Japanese has a rule devoicing high vowels between voiceless obstruents, the word might then be pronounced [sɯku.l], which is close enough. A Spanish speaker must learn to demote Σ SON as low as it is in English; just switching it with NOCOMPLEX isn't enough.
- What about segmental matters, such as neutralization: Japanese [ɺ] for English /r/ and /l/? Optimality theory is pretty silent on this sort of thing.

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