

Week 2 – Phonological Features

September 4, 2012

1 Oppositions

- ★ Consider the sounds [p, p^h, b, b^h, t, t^h, d, d^h, k, k^h, g, g^h] in Nepali. Below are some minimal pairs. Assume there are minimal or near-minimal pairs for all combinations. Explain why the pair illustrating the [p/p^h] distinction is more informative in a way than the pair illustrating the [t/k^h] distinction. What phonetic dimensions must be associated with each contrast?

[pir]	‘anxiety, pain’	[bar]	‘fence’
[p ^h ir]	‘Turn on!’	[b ^h ar]	‘burden’
[tal]	‘lake’	[dar]	‘a kind of tree’
[t ^h al]	‘plate’	[d ^h ar]	‘edge’
[kal]	‘time, death’	[gol]	‘circle, charcoal’
[k ^h al]	‘kind, skin’	[g ^h ol]	‘Mix! Stir!’

2 Distinctive Feature Theory

2.1 Trubetzkoy

Nikolai Sergeevich Trubetzkoy (1890–1938), Russian linguist, used the term **opposition** to refer to a pair of speech sounds that are distinctive, or contrastive. In other words, for those pairs of sounds for which we can find a minimal or near-minimal pair. He classified these oppositions in the following ways:

- **Bilateral** oppositions are those where two members of an opposition have sufficiently many phonetic properties in common which distinguish them from every other member of an opposition.
- **Multilateral** oppositions are those which are not bilateral.
- An opposition is **proportional** if and only if the relation between its members is identical with the relation between the members of another opposition or several other oppositions of the same system.

- An opposition which is not proportional is **isolated**.
- Oppositions wherein one member carries some phonetic property that the other lacks are said to be **privative**. The member carrying the phonetic property is said to be **marked**. This is the origin of the term *markedness* in phonology, which today means either “less-common”, “dispreferred”, or “ill-formed.”
- **Gradual** oppositions are those where members of an opposition differ in some degree of some phonetic property.
- When members of an opposition differ in a way that is neither privative nor gradual, it is said to be **equipollent**.
- An opposition is **neutralizable** iff it occurs in certain contexts. Otherwise it is **constant**.
 - ★ Explain why this paradigm from German establishes that the /t,d/ opposition is neutralizable.

[rat]	<i>advice</i>	[rɛ:tə]	<i>advices</i>
[rat]	<i>wheel</i>	[rɛ:dər]	<i>wheels</i>

(Hyman, 1975, p. 29): “With these notions, Trubetzkoy was able to reveal how the same phonetic contrast may structure differently in different languages.”

2.2 Jakobson

Jakobson introduced the notion of **distinctive feature** into phonological theory.

[NB: The phonetic symbols have been standardized to the IPA, JH]

“While Trubetzkoy’s concern was to capture the phonological properties of such frequent phonetic contrasts as voicing in consonants and height in vowels, the concerns of Jakobson, another founding member of the Prague School, were somewhat different. Jakobson wanted to develop a theory of phonology which would predict only those oppositions which could be found in languages. In particular, he hypothesized that the presence of certain phonetic oppositions precludes the presence of other oppositions. For example, in works such as Jakobson, Fant and Halle (1952) and Jakobson and Halle (1956) it is maintained that languages do not have contrasts between labialized, velarized, and pharyngealized consonants, that is, /C^w/, /C^v/, and /C^ɣ/, respectively. Jakobson claimed that a given language will contrast only one of these three consonant types with a plain /C/. Thus, while there can be an opposition between /C/ and /C^w/, /C/ and /C^v/,

and /C/ and /C^f/, one cannot find an opposition between /C^w/ and /C^y/, /C^y/ and /C^f/, or /C^w/ and /C^f/.

This mutual exclusiveness of these three kinds of consonants led Jakobson, Fant and Halle to propose that they are merely surface phonetic realizations of the same underlying feature of *flatness* (see below). They hypothesized that there are a limited number of such features, say 12 to 15, which together account for all of the oppositions found in the world's languages.

Since many more than 12 to 15 phonetic features are necessary to differentiate the various sounds occurring in languages, it becomes apparent that some of these phonetic features will be “conflated” into the more limited set of phonological or distinctive features. This represents, then, a major departure from earlier phonetic studies of speech sounds. In the work of other phoneticians and phonologists, there is an assumption that the same features are to be used to characterize phonological contrasts in a language and to describe the phonetic content of various speech sounds. Jakobson's position is that there are certain phonetic distinctions, such as labialization, velarization, and pharyngealization, which are not available per se as phonological features but rather are representative of the more basic phonological feature of flatness. Thus, for the first time, the possibility is entertained that the set of phonological features may not be the same as the set of phonetic features.” (Hyman, 1975, p. 30)

Two other innovations of Jakobson: the use of acoustic features and the requirement that all features are *binary*. The motivations again come from typological considerations.

With respect to binary features, it is logically possible that sounds could be *voiceless*, *barely voiced*, *somewhat voiced*, *somewhat fully voiced*, and *fully voiced*. But in fact languages only seem to make a 2-way distinction. Since Trubetzkoy considered voicing a privative opposition, he was (at least implicitly) making a similar claim.

With respect to acoustic features, Jakobson was interested in determining which features define **natural classes** of sounds. The set of sounds sharing a feature form a natural class. These classes ought to be reflected in the phonological patterning of sounds across languages.

- ★ Binary features most naturally describe privative oppositions. How can binary features describe gradual or equipollent oppositions?

- ★ If the phonemes are only identified by distinctive features then what determines the phonetic realization of the phoneme? How could these language-specific instructions be formalized?

References

Hyman, Larry. 1975. *Phonology: Theory and Analysis*. Holt, Rinehart and Winston.

Jakobson, Roman, C. Gunnar, M. Fant, and Morris Halle. 1952. *Preliminaries to Speech Analysis*. MIT Press.

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