

FL notes 2

31) free form > syllable > phoneme > distinctive features. Each to the right a submultiple of leftward term

32) crest – V, slope – C. in diphthongs, the peak of the crest is raised by the contrast compact ~ diffuse (concentrated energy ~ low conc) OR V vs. sonorant (nasal or liquid). crest inherently louder, more energy.

33) usually crest a V, can be liquid, nasal, even constrictive (fricative like s, sh).

In Polish *krvi* the *r* is nonsyllabic, in SC *krvi* it is syllabic.

Prosodic features. Force, quantity, and tone.

34) Stress (as in Russian, English) is intersyllabic. Stosston or Danish *støed* is intra.

Length (German, Czech) is intersyllabic. Intrasyllabic: close contact, vowel is shortened in favor of the following C, open contact, full vowel.

Level. Intersyllabic: two levels. West African *Jabo*, with two levels both raised and diminished. Intra: modulation.

36) Stress is a configurative, namely culminative, feature. Sets the word in Russian. It is incompatible with independent length; a stressed syllable in Russian is inherently longer than an unstressed one. In German stress is determined by word and morpheme structure, and length alone is phonemic. In Polish, stress is automatically on the penult, so that it is not distinctive. Length has been lost in Polish. The Polish stress is weak, v. Russian.

37) speaker selects high or low, rising or falling, long or short; one is present and the other absent. polar terms. Yet both terms have to be present in the sequence so the listener can compare and choose which is which. A contrast in sequence.

38) inherent features involve no sequence, no contrast. They are absolute in themselves. The contrast is only with an absent alternative.

Laws of implication in the acquisition of language. B implies A; loss of A in aphasia implies the loss of B.

39) Search for universal invariances and reduction of the number of inherent features in the languages of the world. Of a group of features that are related, a language may select only one to the exclusion of the others.

Pharyngealization is narrowing of the pharynx or back orifice of the mouth; rounding is narrowing of the front orifice. Reduce them to the same feature: narrowed vs. wider slit.

40) Retroflexed dentals and pharyngealized dentals reduce to the same. Tensity, pressure, aspiration and pre-aspiration all reduce to the same effect. English cons. and vowels are tense. The tense consonants, or lenis, *t,p,s*, etc, often have aspiration.

Sonority features.

Vocalic ~ non-vocalic.

a clear formant structure in the spectrogram. glottis engaged, free passage.

Consonantal ~ non-cons.

lowering in the first formant, reduction of intensity

obstruction in the tract

41) vowels are plus voc, minus cons

cons are plus cons, minus voc

liquids *r l* are plus voc, plus cons

glides *j, h*, etc are minus voc and minus cons.

nasal ~ oral

presence of a nasal formant, some damping of oral formants
mouth resonator supplemented by nasal cavity

compact ~ diffuse

energy increased and in center of spectrum vs. energy not centered and spread around
forward flanged vs. backward flanged. horn shaped resonator for compact, the wide or
low vowels and the velar and palatal and postalveolar consonants. labial and dentals have a
Helmholtz resonator shaped cavity.
seems to be more like a continuum in vowels, or split into compact ~ noncompact and
diffuse ~ nondiffuse

abrupt ~ continuous

silence followed by a burst of energy
rapid turning on or off of the source, as in stops, or several taps, as *r*
all plosives such as p t d k g

42) strident ~ mellow

higher intensity noise with amplification of higher frequencies and weakening of lower
formants vs. its absence
rough edged; supplementary obstruction.
Typically fricative or affricate consonants, like sh, zh, ts, tch

checked ~ unchecked

higher rate of discharge of energy in a shorter time vs. its absence
reduced air to the stoppage of consonants
glottalized consonants,

voiced ~ voiceless

presence of periodic low frequency excitation vs. its absence
vibration of vocal cords
vowels are normally voiced; voiced consonants d, b, v, z, g

43)

Protensity feature

tense ~ lax

longer duration of the steady state portion of the sound, more sharply defined resonance
regions

a deliberate execution of the speech gesture, with a lastingly stationary articulation;
greater deformation of the tract from neutral position, more air pressure
cf. *legato* ~ *staccato* musical notes

tense consonants – all the lenis in English, French, German, while the fortes are lax
tense: p f t s k lax b v d z g

Tonality features

grave ~ acute

low vs. high

peripheral vs. medial

labial and velar consonants, where the resonator is larger and less compartmented than palatal and dental. in vowels: the back vs. front vowels, u o vs. i e ä

flat ~ plain

44) downward shift or weakening of some upper frequency components

the flat or narrowed slit sounds have a decreased back or front orifice and a velarization expanding the resonator

rounded vowels and consonants: u o ü ö ku pu

sharp ~ non-sharp

upward shift and strengthening of upper frequency components

widened slit sounds with a dilated pharyngeal pass and a concomitant *palatalization* dividing the cavity

palatalized consonants

45) sonority features relate to the amount, density and spread of nervous excitation

tonality features relate to the location of the excitation

psychological affinity between optimal chromaticity (red) and vocalic compactness

lessened chromaticity (yellow, blue) and vocalic diffuseness

optimal achromaticity (black, white) and componental diffuseness

lessened achromaticity (gray) and consonantal compactness

dark-light relates to the tonality axis

46) the receiver has to extract the distinctive features from perceptual data

levels moving back to the sender: perception, aural image, acoustic data, motor structure.

47) labials and velars are grave, vs. dentals and palatals; grave – lower tonalities; big undivided resonator

velars and palatals are compact, vs. dentals and labials; compact – centralized, more energy; smaller, divided resonator

stricture at the ends vs. stricture in the middle

48) alveolar and postalveolar fricatives (s, z; sh, zh) and affricates (ts, tsch) are strident, vs. the plosives t, k, etc; random black areas in spectrogram

50) Stratification

the first syllable: *pa*. full closure at front vs. full openness. Spectrogram: a momentary burst, then a prolonged, formanted frequency structure.

diffuse stop is maximal reduction of energy, nearest to silence

open vowel highest energy

51) CV

the nasal consonant appears. Now closed vs. open is modified: a consonant is closed, or closed with a second tract open, a little bit more like a vowel.

this is among the earliest acquisitions of the child

note: pa, then ma shows a *modification* of the simple opposition, a mixing of levels.

52) the nasal may be preceded by split of C by pitch: grave *p* and acute *t*. Pitch is first evinced in the consonants

primary triangle: energy is the vertical axis, pitch the horizontal.

basic features are compact-diffuse and grave-acute

53) vowels then split into two on the energy level. We get an *i* or *u* to oppose *a*.

The diffuse vowel develops two vowels based on pitch, and the consonants develop the energy axis with the compact *k*.

See the triangle here. The minimal model for all languages.

54) quadrangular pattern adds grave-acute to compact vowels or consonants. That is, we get *k ~ sh*, *a ~ ä* or something like that. The first of each pair is grave and compact, the second, acute and compact (velar vs. palatal).

If linear, V distinguish compact, C distinguish grave.

close the front and back orifices and have a big resonator: lower the frequencies

open the front and back orifices and divided the resonator: raise the frequencies

but these combinations may become independent. *Flattening* means close an orifice, *sharpening*, dilate the orifice.

So the *u*, at first simply diffuse, can be significant also for flat. It is naturally both diffuse and flat, depends on what is significant.

55) Laws of implication

Here is the point. First we have *a*. Then we have a diffuse V to oppose it, *i* or *u*. Then the diffuse V splits by tonality and *u* opposes *i*. Possibly then comes a flattening opposition and *u* opposes *i* or a grave V by its flatness. These opposition imply one another. You can't have flat without having tonality and compactness first.

Supply these examples for the table:

0.1 t – p

0.11 i - a

0.111 i – u

0.1111 e – a or ä – a

0,1112 o – e (or ü – i)

0.11121 ua – a (or something like that)

0.1113 a – ua or something

0.112 [the numbering means you have to have 0.11 first] k – t, p

0.1121 sh - k

0.1122 ku - k

0.1123 t' – t

nasal C's bring C's closer to V. nasal V on the other hand deflects the V from its optimal pattern.

56) Constrictives (fricatives, s, f, sh, x) have more energy than stops, so are more like V. V – formant structure, energy; non-V is lack of formants

C - no formants, less energy

liquids are both, like V and C. With liquids, Vocalic and Consonantal become autonomous features.

strident cons is most without a formant structure, so it is most non-vocalic of all. They imply the liquids and the autonomy of both features. Strident ~ mellow is very late, appears after liquids.

Strident stops (tch) have a little more energy. Mellow fricatives (maybe a v as in Russian) are a little less non-vocalic, as they have less noise. This is a split of consonantal and of non-vocalic. It occurs with the appearance of liquids and strident stops. Note the strange interchangeability of the two in Paleosiberian languages.

Nasals and liquids are sonorants. They can turn more consonantal with the prenasalized stops and the strident liquids, famously Czech ř.

57) voiced C's, and, very rarely, voiceless vowels, are a further attenuation.

Optimal C is lax, because reduced energy. May be opposed by a tense C. The voicing that usually comes with lax C's is a deviation from consonantal. It is possible for both tension and voicing to activate. Indian languages have tense voiced C's, to us an impossible idea.

In a tensed vowel (diphthongs, long English vowels, Fr longs) the total energy increases but it is spread around more. The optimal V is non-tense.

59) French. compact C is velar if it is a plosive (k g), it is palatal if it is nasal (n with tilde, n as in onion), and postalveolar if it is a fricative (sh, zh). They are all compact.

See handout on the Fr consonants.

60) Note the insistence on binary oppositions.

61) Interestingly, compact-diffuse in vowels is a continuum, but grave-acute is not.

Note comments on multilinguality and sound change.

