Phonological Theories
Distinctive Features – SPE and Feature Geometry

Session 3
CHOMSKY and HALLE (1968) derived the phonological structure from the morphological structure. Phonemes (as units in the observable surface form) were no longer required.
The features were more dependent on the articulatory configuration, so more differentiated features were required (e.g. not rounded, pharyngealised and retroflex as [flat]).

All phonological features were strictly binary. (the distinction between underlying and surface forms allowed “phonetic features” to take on continuous values).

Focus very much on inherent (segmental) features. Only stress was theoretically developed to any degree.
SPE Inherent Features

- Features defined along four dimensions (compared to the three by JFH):
  - Major class features
  - Cavity features
  - Manner features
  - Source features

- Apart from the first dimension, these reflect the articulatory, production perspective rather than the acoustic/perceptual.
I. **Major class features**

<table>
<thead>
<tr>
<th>Jakobson and Halle</th>
<th>Chomsky and Halle</th>
<th>Halle and Stevens (changes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>±vocalic</td>
<td>±vocalic (±syllabic)</td>
<td></td>
</tr>
<tr>
<td>±consonantal</td>
<td>±consonantal</td>
<td></td>
</tr>
<tr>
<td>±sonorant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

II. **Cavity features**

| Compact/diffuse    | ±anterior          | ±labial                     |
| Grave/acute        | ±coronal           |                            |
| Sharp/plain        | ±high              |                            |
| Flat/plain         | ±low               |                            |
| ±back              | abolished:         | ±low for vowels             |
| ±round             | added:             |                            |
| ±distributed       | ±lateral           | ±pharynx constriction      |
| Nasal/oral         | ±nasal             |                            |
| (tense/lax)        | ±covered           | → ±advanced tongue root    |
### III. Manner of articulation features

<table>
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<th>Halle and Stevens (changes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>discontinuous/continuant (=abrupt/continuant)</td>
<td>±continuant</td>
<td>abolished: ±tense for vowels</td>
</tr>
<tr>
<td>tense/lax</td>
<td>±tense</td>
<td>added: ±advanced tongue root</td>
</tr>
<tr>
<td>(strident/mellow)</td>
<td>±instantaneous release</td>
<td></td>
</tr>
<tr>
<td>checked/unchecked</td>
<td>pressure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>suction</td>
<td></td>
</tr>
</tbody>
</table>

### IV. Source features

<table>
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<th>Halle and Stevens (changes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>strident/mellow</td>
<td>±strident</td>
<td>±stiff vocal cords</td>
</tr>
<tr>
<td>voiced/voiceless (tense/lax)</td>
<td>±voice</td>
<td>±slack vocal cords</td>
</tr>
<tr>
<td>(II)</td>
<td>±heightened subglottal pressure</td>
<td>±spread glottis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>±constricted glottis</td>
</tr>
<tr>
<td>(II)</td>
<td>±glottal constriction</td>
<td></td>
</tr>
</tbody>
</table>
The features (as presented so far) are subclassified according to function – *major class features* – or production properties – *cavity*, *manner* and *source features*. But there are *no dependencies* between the features.

Nick Clements (1985) presented a grouping of features which took the link between features and their articulators into account:

This “ordered” view of features is known as *Feature Geometry*

Some features are regarded as *independent* of a particular articulator (e.g. consonantal, sonorant, approximant)

Other features are dependent on a specific *area* of the production system (e.g. voiced, vs. nasal)

Other features are clearly dependent on a specific *articulator* (e.g. round, high, ATR)
Basic Geometry for Features

(after CLEMENTS 1985, cf. SPENCER pp. 155ff.)

```
ROOT
  /    /
LARYNGEAL SUPRALARYNGEAL
   /  /
PLACE MANNER
```
Example: Feature Geometry representation of /t/
Example: Feature Geometry representation of /t/

```
ROOT
+consonantal
-approximant
-sonorant

SUPRALARYNGEAL

LARYNGEAL

PLACE

MANNER

Phonological Theories
```
Example: Feature Geometry representation of /t/
Example: Feature Geometry representation of /t/
Example: Feature Geometry representation of /t/
Alternative Feature Geometry scheme

(HALLE 1992)

- [round] ➔ Labial
  - [anter]
  - [distrib]
- [back]
  - [high]
  - [low]
- [nasal] ➔ Soft Palate ➔ Nasal
- [ATR]
  - [RTR]
- [spread gl]
  - [constr gl]
  - [voiced]

Terminal features ➔ Articulator ➔ Cavity ➔ Stricture ➔ Root

[later]
- [strid]
- [contin]
1. Specify a SPE and a JFH matrix for the word *Standlicht* /ʃtantlɪçt/ and compare. *Make notes of any problems, queries or objections you have!*

2. Draw a series of feature-geometry trees for the same word (use the CLEMENTS arrangement).

3. Does the feature-geometry scheme by HALLE 1992 contain any theoretical or practical differences when compared to CLEMENTS/SPENCER?