## *Phonemic Analysis: Contrastive and Complementary Distribution—Examining environments and grouping phones*

**1. Italian**

Focus on the phones [k] and [t]—do they contrast? What about their nasal counterparts [ŋ] and [n]? ([ˈ] means that the following syllable is stressed.)

| | | | | | |
|---|---|---|---|---|---|
| [ˈneːro] | black | [ˈstaŋko] | tired | [ˈtapːo] | tap |
| [ˈaŋke] | also | [ˈfiːne] | end | [ˈteŋgo] | I hold |
| [ˈnjɛnte] | nothing | [franˈtʃjeze] | French | | |
| [ˈluŋgo] | long | [ˈuŋgja] | claw | | |
| [ˈkaːpo] | head | [ˈliŋgwa] | language | | |
| [ˈonda] | wave | [inˈvɛrno] | winter | | |

**2. Distributions:**

| 1. [k] and [t]: | *environment* | *generalisations* |
|---|---|---|
| [k] / | ŋ ___ e<br>ŋ ___ o<br># ___ a | "in these data, [k] occurs either after a velar nasal or word-initially (before a)" |
| [t] / | n ___ e<br>s ___ a<br># ___ e<br># ___ a | "in these data, [t] occurs either word-initially (before e or a), or between an alveolar consonant and a vowel" |

Since both [k] and [t] can occur in the same environment (#___a), they have **contrastive distribution**. Note also the sub-minimal pair [kaːpo] and [tapːo].

Notice also the very similar environments of ŋ ___e and n___e.

Further searching would reveal **MINIMAL PAIRS** like ˈkɔnto (account) versus ˈtɔnto (dull). Because [t] and [k] contrast, they must be members of two different phonemes in Italian. (How about English—can you demonstrate the contrastive status of [t] and [k]?)

2. [ŋ] and [n]:

| | *environment* | *generalisations* |
|---|---|---|
| [ŋ] / | a___k<br>u___g<br>i____k<br>e____g | "in these data, [ŋ] occurs before a velar stop" |
| [n] / | #___e<br>#___j<br>ɛ___t<br>o___d<br>a___tʃ<br>i___v<br>i___e | "in these data [n] occurs in a very disparate set of environments: either word-initially before a vowel and a consonant" |

Do [ŋ] and [n] occur in the same environment, and hence have contrastive function? No, because according to the data, [n] never occurs before a velar stop [k or g] and [ŋ] never occurs anywhere else BUT before a velar stop. They are therefore in **COMPLEMENTARY DISTRIBUTION**. And since both sounds are phonetically similar, i.e. nasals, they can be grouped together as members of one phoneme. Is the situation the same for these sounds in English?

Rule:

/n/ → [n] before velar stops.

/n/ → [ŋ] elsewhere