Introduction to Phonological Analysis **Handout 7 (Sept. 26)**
LING 232A/632A, Fall 2013
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Japanese nasals: what phoneme(s) to postulate in the syllable coda position?

Enlarged summary of the Tuesday discussion

Reminder: a nasal in the coda position must be **homorganic** (share the same place of articulation) with the subsequent consonant, or must be [ŋ] before the end of the (phonological) word.

Question: what phoneme should we postulate in this position?

Preliminary: what is a phoneme?
Phoneme/s: a phoneme in the structuralist sense is "the *smallest linguistic unit* in a specific language that is capable of conveying a *distinction in meaning*" (hence, minimal pairs).

Phoneme/g: a phoneme in the generativist sense is a "letter" of the "alphabet" employed to writing the phonological forms of the items in the mental lexicon; that is, the segments possibly appearing in underlying representations in a specific language.

We focus on "phoneme/g". Please check if these suggestions would also work with "phoneme/s".

Possible answers to the question:

1. **Either /n/ or /m/ (depends on the etymological origin of the word, or randomly assigned)**
   The observed surface forms can be derived by supposing either /n/ or /m/ in the underlying representation, beside postulating a place assimilation rule and a rule for the word final position. These rules must be supposed anyway. It is more **parsimonious** *not* to suppose any further phoneme(s/g) in the linguistic system of Japanese (cf. Ockham's razor).
   We just flip a coin to decide whether we postulate /n/ or /m/. That's not an elegant solution, but do you have better? In some cases, however, we can argue for either /n/ or /m/ depending on the historical origin of the word. Counter-argument: neither the child learning her mother tongue, nor the native adult is aware of the history of their language.

2. **Either /n/ or /m/, and I do not know**
   The derivations work with both underlying /n/ and /m/, while supposing a third phoneme is not a parsimonious solution. So I cannot know, and as a scientist, I prefer understatements. That is fair enough, but what do you do next? Give up science and go making more money?

3. **/m/**
   I cannot know whether it is /n/, or /m/, and so I make a random choice. An argument might be that I take /m/, because [m] is the allophone that appears in most environments. Counterargument: when one argues that the default (elsewhere) allophone – the one that appears in "most environments" – should be taken as the phoneme/g, then the implicit argument is that these "most environments" are the most difficult to summarize in an elegant form. Other environments can easily be captured, and the allophone in the "rest" is then used as the underlying segment (phoneme/g): the one that does not undergo any rule. Here, it is not the case that the environment of [m] would be difficult to summarize.

4. /n/

I cannot know whether it is /n/ or /m/. I take /n/ because [n] is the **default** segment among the nasals: the one that is the most frequent in cross-linguistic comparison, and which can therefore be argued to be the "simplest". Its place of articulation is also located at a middle position between [m] and [ŋ], so it looks like a good "compromise".

5. /ŋ/

I cannot know which nasal it is. But if I posit /ŋ/, then I can throw away one rule: we will only need the place assimilation rule (a well motivated one!); and we can spare the rule for the word final position – whose motivations are much harder to understand, at that!

Disadvantage 1: This way, we have three nasal phonemes(g/s?) in Japanese, which is a less parsimonious solution. The alphabet for encoding the underlying forms is larger, and therefore storing the mental lexicon requires more memory space. (Is that really an argument in 2013, when our computers are much more powerful than in the 70s?) Probably it requires more memory than storing the transformation rule for word final positions.

Disadvantage 2: I order to fully account for the distribution of the nasals, we also have to posit that Japanese lexical items only allow /n/ and /m/ to appear in onset positions, and /ŋ/ only in syllable coda positions. Why is it so? Is this additional stipulation on the level of the underlying form an elegants approach? Phonology hopes to account for sound patterns exclusively by referring to the underlying form → surface form mappings… if possible.

6. Neither /n/ nor /m/, but a third, abstract phoneme, say /XT33/. Ok, let's call it /N/…

As we cannot know it, let's just call it phoneme /XT33/. But then, both problems mentioned above for /ŋ/ apply again, beside the need for the additional rule applied in word final positions. We can also call it /N/. Here, letter "N" is chosen because it reminds us of the nasals; or because [n] is cross-linguistically the default nasal. And then what…? Unless…

7. [-syllabic, +nasal], underspecified for place of articulation

… unless /N/ stands for a segment that is not specified for place. In its feature matrix, the values of some features ([nasal], [syllabic], etc.) are specified, but not the features for place. From a structuralist perspective, this solution might sound cute; but technically speaking it is just the same as the one above, and invites the same points of criticism. However, from a generativist perspective, it has a number of advantages.

First, it saves you one bit of information in mental memory for each place feature of each segment of each lexical item. If the mind does not employ "phoneme/g letters" to encode phonological information in the mental lexicon, but feature matrices, then an underspecified segment is a much shorter data structure (requires less bits) than a fully specified segment.

Second, the allophony rules will not *overwrite* already existing (although useless) feature values, but *add* new (so far non-existent) features to the segment. This solution seems to be more elegant… at least to me.

What needs to be explained now is why Japanese underlying forms (must?) have the place feature specified in onset positions, but must not have it specified in coda positions. The answer may be related to the fact that onsets are preferred positions to codas (see later), as exemplified by the restrictions on the coda position in Japanese, as well as in many other languages; and, consequently, more information is "allowed to be stored" in the onset position.

Morphology: Hungarian vowel harmony

Illative - into, to	Inessive - in, inside	Elative - out of, from
Allative - towards, to	Adessive - at, by	Ablative - away from
Sublative - onto, to	Superessive - on, in	Delative - from, from off; about
Instrumental - with	Causal-final - for, because of	Terminative - until
Translative - turning into	(and quite a few more, some of them with questionable status…)	

(1)

	'table'	'pen'	'cup'	'running'	'bread'	'shoe'	'book'	'issue'
Nominative	*asztal*	*toll*	*pohár*	*futás*	*kenyér*	*cipő*	*könyv*	*ügy*
Accusative	*asztalt*	*tollat*	*poharat*	*futást*	*kenyeret*	*cipőt*	*könyvet*	*ügyet*
Dative	*asztalnak*	*tollnak*	*pohárnak*	*futásnak*	*kenyérnek*	*cipőnek*	*könyvnek*	*ügynek*
Illative	*asztalba*	*tollba*	*pohárba*	*futásba*	*kenyérbe*	*cipőbe*	*könyvbe*	*ügybe*
Inessive	*asztalban*	*tollban*	*pohárban*	*futásban*	*kenyérben*	*cipőben*	*könyvben*	*ügyben*
Elative	*asztalból*	*tollból*	*pohárból*	*futásból*	*kenyérből*	*cipőből*	*könyvből*	*ügyből*
Allative	*asztalhoz*	*tollhoz*	*pohárhoz*	*futáshoz*	*kenyérhez*	*cipőhöz*	*könyvhöz*	*ügyhöz*
Adessive	*asztalnál*	*tollnál*	*pohárnál*	*futásnál*	*kenyérnél*	*cipőnél*	*könyvnél*	*ügynél*
Ablative	*asztaltól*	*tolltól*	*pohártól*	*futástól*	*kenyértől*	*cipőtől*	*könyvtől*	*ügytől*
Sublative	*asztalra*	*tollra*	*pohárra*	*futásra*	*kenyérre*	*cipőre*	*könyvre*	*ügyre*
Superessive	*asztalon*	*tollon*	*poháron*	*futáson*	*kenyéren*	*cipőn*	*könyvön*	*ügyön*
Delative	*asztalról*	*tolltól*	*pohártól*	*futástól*	*kenyértől*	*cipőtől*	*könyvtől*	*ügyről*
Instrumental	*asztallal*	*tollal*	*pohárral*	*futással*	*kenyérrel*	*cipővel*	*könyvvel*	*üggyel*
Causal-final	*asztalért*	*tollért*	*pohárért*	*futásért*	*kenyérért*	*cipőért*	*könyvért*	*ügyért*
Terminative	*asztalig*	*tollig*	*pohárig*	*futásig*	*kenyérig*	*cipőig*	*könyvig*	*ügyig*
Translative	*asztallá*	*tollá*	*pohárrá*	*futássá*	*kenyérré*	*cipővé*	*könyvvé*	*üggyé*

etc.

(2)

	'Marry'	'paper'	'man'	'bridge'
Nominative	*Mari*	*papír*	*férfi*	*híd*
Accusative	*Marit*	*papírt*	*férfit*	*hidat*
Dative	*Marinak*	*papírnak*	*férfinak/férfinek*	*hídnak*
Illative	*Mariba*	*papírba*	*férfiba/férfibe*	*hídba*
Inessive	*Mariban*	*papírban*	*férfiban/férfiben*	*hídban*
Elative	*Mariból*	*papírból*	*férfiból/férfiből*	*hídból*
Allative	*Marihoz*	*papírhoz*	*férfihoz/férfihez*	*hídhoz*
Adessive	*Marinál*	*papírnál*	*férfinál/férfinél*	*hídnál*
Ablative	*Maritól*	*papírtól*	*férfitól/férfitől*	*hídtól*

etc.

Reading: Chomsky and Halle 1968, from Goldsmith (see online).

Homework: (1) Why do Ch&H call their novel representation a "feature matrix"?
(2) Collect data about (a) the morphology of your language, as well as either (b1) child speech of your language, and/or (b2) speech errors (descriptive and/or prescriptive sense) in your language.