Allomorphy, the interface, and the phonological index

an introduction to the phonology-morphology interface
1st class: Allomorphy – preliminaries and basic assumptions
Allomorphy – preliminaries and basic assumptions

Basic question:
What does a speaker know when s/he knows a language?
Allomorphy – preliminaries and basic assumptions

Basic question:
What does a speaker know when s/he knows a language?

Not the same as:
1) What does a speaker do when speaking a language?
2) What does the speaker have to know to speak?
Allomorphy – preliminaries and basic assumptions

[maen]
Allomorphy – preliminaries and basic assumptions

\[\text{[mæn]}\]
\[\text{[mæn-li]}\]
\[\text{[mæn-hʊd]}\]
\[\text{[mæn-meɪd]}\]
Allomorphy – preliminaries and basic assumptions

This concept is expressed by producing an ordered set of acoustic signals
Allomorphy – preliminaries and basic assumptions

[mæn]
[mæn-li]
[mæn-hʊd]
[mæn-meɪd]
[poʊst-mən]

Is this not the same entity?
There is a reason for this pronunciation:

\[
\begin{align*}
[m\ddot{a}n] \\
m\ddot{a}n-li \\
m\ddot{a}n-h\ddot{u}d \\
m\ddot{a}n-me\ddot{i}d \\
p\ddot{o}st-m\ddot{a}n
\end{align*}
\]

Indeed, unstressed [æ] reduces to [ə] in English
Allomorphy – preliminaries and basic assumptions

Again, what does the speaker know?
Allomorphy – preliminaries and basic assumptions

Again, what does the speaker know?

1) m+æ+n
2) *æ [-stress]

Is this enough? *[pɔʊstmɨn, pɔʊstmn]
Allomorphy – preliminaries and basic assumptions

Again, what does the speaker know?

1) m+æ+n
2) *æ[-stress] and
3) Unstressed æ => [ə]
Allomorphy – preliminaries and basic assumptions

Again, what does the speaker know?

1) m+æ+n
   specific information

---

1) *æ [-stressed]
2) Unstressed æ => [ə]

---

General rule
Allomorphy – preliminaries and basic assumptions

Again, what does the speaker know?

1) $m + \ddot{a} + n$  
   specific information

1) $\dddot{a} [-\text{stress}]$

2) Unstressed $\ddot{a} \Rightarrow [\ddot{e}]$

(the rules are not about this word, are blind to its meaning)
Allomorphy – preliminaries and basic assumptions

How the system works

1) *æ[-stress]
2) Unstressed æ => [ə]
Allomorphy – preliminaries and basic assumptions

What the speaker knows

/maən/
/pwɔst+mæn/

1) *æ[-stress]
2) Unstressed æ => [ə]

What the speaker produces

[mæn]
[pwɔstmən]
Allomorphy – preliminaries and basic assumptions

Underlying representation

Phonology

1) *æ [−stress]
2) Unstressed æ => [ə]

/mæn/

/póуст+mæn/

Realization (surface representation)

[мэн]

[роустмэн]
Allomorphy – preliminaries and basic assumptions

Objection no 1: maybe *postman* does not really include *man*, or that its pronunciation is already part of the knowledge of the speaker:

1) *æ*-[-stres]
2) Unstressed æ => [ə]

Phonology has no effect
Allomorphy – preliminaries and basic assumptions

That may be the case for *postman* and *man*. But it does not affect the overall architecture of language. **All linguists agree** that there can be a difference between what we know or intend to produce and what we produce.

Phonology

/x/  →  [y]
Recall:

What does a speaker **know** when s/he knows a language?

**Not** the same as:

What does the speaker have to know to speak?
Allomorphy – preliminaries and basic assumptions

Objection no 2: this architecture suggests that the system is economic: it doesn’t memorize information about the realization of specific items that is already encoded as a phonological rule.

/mæn/
/pou̯stmæn/

[maen]
[pou̯stmæn]

1) *æ[-stress]
2) Unstressed æ => [ə]
Allomorphy – preliminaries and basic assumptions

Objection no 2: this architecture suggests that the system is economic: it doesn’t memorize information about the realization of specific items that is already encoded as a phonological rule.

/mæn/  /poustmæn/  [mæn]  [póʊstmən]

1) *æ[−stress]

2) Unstressed æ => [ə]

... indeed, this is all the speaker must know. But this is not our goal! Our question is what the speaker really knows!
Again, it may be the case that speakers store redundant information, especially for frequent words. But again this does not affect the overall architecture of language. **All linguists agree** that some redundant information is not part of what we know.
Another example, from Russian

[górət]  ‘city (nom.sg.)’
[gəradá]  ‘city (nom.pl)’
Allomorphy – preliminaries and basic assumptions

/graph/ /gorad+á/

1) Reduce /o,a/ to [a] pretonically
   [ə] in other unstressed positions

Underlying representation

1) Devoice final C

Phonology

Realization (surface representation)

[graf] [gəradá]
Summary of basic tools and assumptions

1) Underlying representations

2) Surface representations

3) “Phonology”: a component which applies to the UR, possibly altering it, and results in a SR.

4) An architecture that is (to some extent) economic.
Allomorphy

First approximation

“The scenario under which the same unit of meaning has two or more mutually exclusive realizations”

[góːrət]

[gərad] / _-á
Allomorphy

This representation “jumps a stage” in our architecture, namely the UR. Let us put it in:
Allomorphy

Back to english

$m\text{án}$

$[m\text{án}]$

$[m\text{ən}]$

$/mæn/$
Allomorphy

In both of these cases, the changes in the stem

1) have nothing to do with its meaning.

2) result from the sounds of the stem appearing in a different phonological configuration

3) reflect general rules of the phonology of the languages

4) Apply to single segments:
Allomorphy

/g ó r a d /

Will be realized as [o] because stressed
Will be realized as [ə] because unstressed and not immediately pretonic
Will be realized as [t] because final
Allomorphy

\[ \text{g} \quad \text{ó} \quad \text{r} \quad \text{ə} \quad \text{t} / \]

- Will be realized as \([o]\) because stressed
- Will be realized as \([ə]\) because unstressed and not immediately pretonic
- Will be realized as \([t]\) because final
Allomorphy

\[ /g\, o\, r\, a\, d\, á/ \]

- Will be realized as \[ə\] because unstressed and not immediately pretonic
- Will be realized as \[a\] because immediately pretonic
- Will be realized as \[d\] because not final
Allomorphy

/gərədá/

Will be realized as [ə] because unstressed and not immediately pretonic
Will be realized as [a] because immediately pretonic
Will be realized as [d] because not final
Allomorphy

Now recall:

First approximation

“The scenario under which the same unit of meaning has two or more mutually exclusive realizations”

- In both cases examined, it is not the unit of meaning that has two realizations, but rather the segment.
Allomorphy

- The unit of meaning *comes to have* two realizations because one or more of its segments does, but for the unit of meaning this is *epiphenomenal.*
Allomorphy

- The unit of meaning *comes to have* two realizations because one or more of its segments does, but for the unit of meaning this is epiphenomenal.

- Crucially, what the speaker *knows* in this case is only *one* form:
Allomorphy

What the speaker knows

/mæn/

/mən/

[mán]

[mən]
Indeed, in our architecture, the unit of meaning is never in direct relation to its realizations. For it to have two correspondents, the split must occur “earlier.”
Allomorphy

Indeed, in our architecture, the unit of meaning is never in direct relation to its realizations. For it to have two correspondents, the split must occur “earlier.”

What the speaker knows

/mæn/

[mán]

[mən]
Allomorphy

Consider now the following case from Hebrew

<table>
<thead>
<tr>
<th></th>
<th>singular</th>
<th>plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘line’</td>
<td>pas</td>
<td>pas-im</td>
</tr>
<tr>
<td>‘tray’</td>
<td>tas</td>
<td>tas-im</td>
</tr>
<tr>
<td>‘tax’</td>
<td>mas</td>
<td>mis-im</td>
</tr>
</tbody>
</table>

Non-alternating stem

Alternating stem

but
Allomorphy

There is no phonological reason for this alternation.

Moreover, it is the only word in Hebrew to display this alternation in this environment.
Allomorphy

In such cases, it seems inescapable and uncontroversial to assume **two underlying representations**

- `/mas/` → `[mas]`  
- `/mis/ plural` → `[mis]`
Allomorphy - definition

“The scenario under which the same unit of meaning has two or more mutually exclusive underlying representations”

(underlying = lexical, stored)
Allomorphy - definition

“The scenario under which the same unit of meaning has two or more mutually exclusive underlying representations”

(underlying = lexical, stored)

To be distinguished from epiphenomenal allomorphy, wherein there’s only one UR.
Conditioning

The allomorphy from Hebrew was conditioned by grammatical information. This is called “grammatical conditioning.”

‘tax’

/mas/ /mis/ plural

[mas] [mis]
Conditioning

Although we will discuss such cases, our main concern will be with **Phonologically-conditioned allomorphy**.
Phon-con Allomorphy

Argentinian Spanish

1sg.indic | infinitive
---|---
‘drink’ tóm-o | tom-ár
‘ring’ swén-o | son-ár

Alternating stem

Non-alternating stem
Phon-con Allomorphy

Argentinian Spanish

<table>
<thead>
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<th>1sg.indic</th>
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<td>‘drink’</td>
<td>tóm-o</td>
</tr>
<tr>
<td>‘ring’</td>
<td>swén-o</td>
</tr>
</tbody>
</table>

Spanish phonology does not rule out either stressed [ó], as shown, or unstressed [we], as in [kwestjón].
# Phon-con Allomorphy

**Palestinian Arabic**

<table>
<thead>
<tr>
<th></th>
<th>3msg.past</th>
<th>+3ms.obj</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘write’</td>
<td>kātab</td>
<td>kātab-o</td>
</tr>
<tr>
<td>Neg.</td>
<td></td>
<td>katab-óː-ʃ</td>
</tr>
<tr>
<td>‘throw’</td>
<td>ráma</td>
<td>ramá-ː</td>
</tr>
<tr>
<td>Neg.</td>
<td></td>
<td>rama-hóː-ʃ</td>
</tr>
</tbody>
</table>
Phon-con Allomorphy

If 3ms.obj can be realized [ho:], then why not have this realization throughout? Arabic **phonology** does not rule out *katabho, katabhoʃ, ramaho*...

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<td>ráma</td>
</tr>
<tr>
<td>Neg.</td>
<td></td>
</tr>
</tbody>
</table>
Phon-con Allomorphy

The phonology of these languages does not automatically provide the two realizations; A priori, there is no /x/ such that it can be fed into the phonological filter of Spanish and make the following correct:

*  
‘ring’  \(\rightarrow\) /x/  \(\rightarrow\) [swén]  \(\rightarrow\) [son]
Phon-con Allomorphy

Again, it seems more correct to assume **two** underlying representations

`‘ring’`  

/swén/

/son/

Stress, a phonological entity, determines which allomorph will be selected.
Again, the phonological environment determines which allomorph will be selected.
Phonological Optimization

Hiatus (a sequence of two tautosyllabic vowels) is allowed in French:

[neã] ‘nothingness’
[ʒeã] ‘immense’
[neõ] ‘neon’
[ʒeoloʒi] ‘geology’
Phonological Optimization

Such hiatus is sometimes created by the concatenation of prefix+base

[pχe-okype]  ‘worried’
[pχe-ãgaze]  ‘pre-committed’
[pχe-buje]  ‘pre-capped’
[pχe-nazalize]  ‘pre-nasalized’
Phonological Optimization

But after some prefixes, a consonant surfaces if and only if hiatus will result from prefix+stem:

[dez-okype]  ‘vacated’
[dez-ãgaʒe]  ‘uncommitted’
[de-buʃe]    ‘uncapped’
[de-nazalize] ‘denasalized’
Phonological Optimization

The choice of [dez] over [de] before a vowel prevents hiatus and makes the form better phonologically. It is phonologically-optimizing.

But the possibility of preventing hiatus, and the specific strategy to prevent it, are specific to this prefix.
For these reasons, many phonologists assume the following architecture:

```
Phonological Optimization

For these reasons, many phonologists assume the following architecture

Phonology
```

Diagram:

```
'undo'
  /de/
  /dez/
  [de-buʃe]
  [dez-okype]
```

Diagram:

```
Phonology
```
Phonological Optimization

This contrasts with the situation in other prefixes, where there aren’t two allomorphs

‘ahead’ &gt; /pʁe/ &gt; [pχe-buʃe] &gt; [pχe-ɔkype]
Phonology here is doing something quite different from what we saw before: it not only makes a UR conform to the rules of the language, but also selects between URS.

Phonological Optimization

Phonology

─ 'undo'
  └── /de/
  └── /dez/

[debuj[e] [dezokype]

Phonology
Conditioning and optimization

But other phonologists argue against this view, for two main reasons:

1) It mixes levels, in that phonology is no longer interpretive.
Conditioning and optimization

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1) It mixes levels, in that phonology is no longer interpretive.

2) Many cases of phonological conditioning are not optimizing...
Conditioning and optimization

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1) It mixes levels, in that phonology is no longer interpretive.

2) Many cases of phonological conditioning are not optimizing...

More on this later. For now -
Summary of 1st class

▪ All phonological approaches must have at least two levels of linguistic reality.

▪ In realization, there are at least three: concept, UR, and SR

▪ When one UR is split into two SR, it is epiphenomenal allomorphy – in fact only phonology is at work.
Summary of 1st class

- Allomorphy is one concept being split into two URs.

- Allomorphy can be conditioned by the phonological environment or by the grammatical environment (everything else).

- Within phonologically-conditioned allomorphy, there are optimizing and non-optimizing cases.
Summary of 1st class

- There is a debate whether optimizing cases are the result of the application of phonology or not.
In the next classes

- How is allomorph selection in the phonology formalized?

- The autosegmental alternative.

- What is so problematic about allomorph selection in the phonology?

- The limits of allomorphy.
In the next classes

- Allomorphy and the architecture of grammar.

- Are all allomorphies equal? Weak and strong suppletions

- Is allomorphy really that bad? Paradigm Uniformity

  Etc.