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Lecture 6
Phonology in allomorphy

Some patterns of allomorphy must be **memorized** on a **word-by-word** basis:
    there's **no systematic reason** from our perspective why, e.g., *frag-ile* and
    frang-ible have different allomorphs of the morpheme meaning 'break'.

But we have also seen many patterns of **regular allomorphy**—
    systematic rules that apply in the **same way** to **large groups of words**.
E.g., the morpheme *in-* appears as *im-* before **any** base beginning with a **bilabial**.

When a morpheme has regular allomorphy, it usually has a **basic** form,
    which other allomorphs can be said to be **derived from**.
Derived allomorphs appear in **more restricted contexts**;
    the basic allomorph appears **by default** when it's **not** in those contexts.

Thus: *in-* is the **basic** allomorph; *im-*, *il-*, and *ir-* are **derived**.
    Why? *Im-, il-, ir-* appear **only** before bilabials, *l*, and *r* (respectively);
    in- appears in **all other environments**.
Regular allomorphy can be thought of as a **rule** that **converts** the basic allomorph
    into one of the derived allomorphs.
We can write these rules using the following symbolic notation:

        in → *il* / __*l*   *in* → *ir* / __*r*   *in* → *im* / __bilabial

The **left** side shows **what** basic form becomes **what** derived form;
    the **right** side shows **what context** it happens in;
    the slash mark / separates the two sides.
On the right side, the **underscore** __ shows **where** the morpheme appears:
    so "__*r*" means that the morpheme appears **before *r***.
Thus "*in* → *ir* / __*r*" means "*in* becomes *ir* when it appears before *r*".

The **same** pattern of allomorphy affects the prefix *con-*:
    it appears as *col-* before *l*, *cor-* before *r*, and *com-* before bilabials.
Thus the rules above are **not specific** to the morpheme *in-*;
    we can state them as rules affecting **Latin prefixes ending in *n***:

        n → *l* / __*l*   *n* → *r* / __*r*   *n* → *m* / __bilabial

In Latin, these were **phonological** rules—
    rules controlling the overall **sound system** of the language.
In English, they're **allomorphic** rules—a piece of "borrowed phonology"—
    since they only affect morphemes borrowed from Greek and Latin.

Other allomorphic rules based on phonology can be written this way as well:
  e.g., the **voicing assimilation** of *g* and *b* before voiceless consonants:

  $b \rightarrow p$ / __voiceless $g \rightarrow c$ / __voiceless

Note that *b* and *g* are undergoing **the same change** here:
  they're both **voiced stops** that **become voiceless stops** in that environment.
So we can restate these two rules as a **single rule** applying to **both of them**:

  voiced stop $\rightarrow$ voiceless / __voiceless

This is a **single rule** applying to a **natural class** of sounds ("voiced stops"),
  instead of just affecting a single sound.
This is a common feature of **phonological** rules, and therefore it's a common
  feature of **allomorphic** rules that are **based on** phonological rules as well.
(Note that, as written, this should apply to *d* as well, becoming *t* before voiceless consonants.
  I can't think of any morphemes that do that, but just because other rules often take priority.)

Rules such as these can be described as **morphophonological rules**—
  they describe how **morphemes** change in different contexts,
  in ways that are motivated by **phonological** features and patterns.
Morphophonological rules sometimes have **exceptions**—
  not all morphemes undergo them in the same way—
  but they're consistent enough to be good guidelines.

Many morphophonological rules affect Greek and Latin morphemes in English,
  with **varying degrees** of consistency.
I'm not going to discuss them all here individually, but lots of them are listed in
  the textbook and you should familiarize yourself with those.

It's worth remembering that **most** of the phonologically conditioned allomorphy
  in Greek and Latin morphemes **depends on the phonology of Greek and
  Latin**, not the phonology of English.
The pronunciation of Latin and Greek morphs in English is **not the same** as the
  way they would have been pronounce **in** Latin and Greek themselves.
Many of these allomorphic patterns **depend on obsolete, borrowed** phonology.

E.g., *syn-* assimilates to *sym-* before bases beginning with *ph-*: *sym-phony*.
  But *ph* represents [f], which is **not bilabial**; why does *n* assimilate to /m/?
  (Note that *in-* and *con-* **don't assimilate** to *im-* and *com-* before [f]: *in-finite, con-fident*.)
Because **in Ancient Greek**, *ph* **was** a bilabial sound. (It was [pʰ]: an **aspirated** stop.)
  Assimilation of *syn-* to *sym-* before *ph* **made phonetic sense** in Ancient Greek;
  and English **borrowed that pattern** of allomorphy.

This means **phonologically conditioned allomorphy** can sometimes be based on
  phonology that is **no longer relevant** due to **subsequent change**;
and the **spelling** of these morphs is often a **more consistent** guide to their **Latin
  and Greek pronunciations** than to their English pronunciations!

Consider the **total assimilation** of *d* before *c*, as in *ac-commodate* and *ac-culturate*.

$$d \rightarrow c \: / \: \_\_c$$

Look at *ac-cept* and *ac-cident*. The prefix undergoes assimilation in the **spelling**,
 but the **pronunciation doesn't match**: *ac-* has [k]; *-cep-* and *-cid-* have [s].
 So the result **doesn't sound like assimilation** at all.
Why does this happen?
 In Latin, the letter *c* **always** represented the sound [k];
 the [s] pronunciation was a later development in French.
So the **assimilation** of *ad-* to *ac-* before *c* **made phonological sense** in Latin;
 and English maintains it even when the **phonological motivation** is gone.

Why is *c* pronounced as [s] in *-cep-* and *-cid-*?
 It's another **regular pattern** based on **obsolete, borrowed phonology**.
As a result of changes in the history of **French**,
 c came to be pronounced [s], and *g* became [dʒ], before **front vowels**.
 (Though these **do not affect spelling**, they're still important morphophonological rules!)

$$c \rightarrow [s] \: / \: \_\_\text{front V} \qquad g \rightarrow [dʒ] \: / \: \_\_\text{front V}$$

Since the way English handles Latin loanwords is **based on French**,
 (almost) **all** Latin loanwords in English follow those rules for *c* and *g*
 (and the same is true for Greek loanwords, since those are handled based on Latin).
Thus *re-cip-ient* and *re-cede* have [s] because *c* is followed by a front vowel;
 re-cord and *custod-y* have [k] because *c* is followed by a non-front vowel.
Similarly, *frag-il-ity* and *gener-al* have [dʒ] before front vowels;
 rug-ose and *dis-gust* have [g] before non-front vowels.
(Note that it **doesn't matter** if the *g* or *c* is in the **same morpheme** as the front vowel or not!
 A following front vowel turns them into [s] or [dʒ] even **through** a morpheme boundary.)

But what matters for this purpose **isn't** whether the vowels are front **in English**;
 it's whether they were front vowels **in Latin**!

E.g., **in English**, the letter *a* represents **front vowels** in *cap-ture* and *dec-ade*.
 But *c* is pronounced [k] in those words anyway!
Why? Because **in Latin**, *a* represented a **central** vowel, not a **front** vowel.
(Similarly, the *i* after *c* in *su-i-cide* **doesn't** represent a front vowel in English, but it **did** in Latin;
 that's why the *c* there is pronounced [s].)

The **spelling** makes the pattern clearer than the **pronunciation** of the vowels:
 c and *g* represent [s] and [dʒ] before the **letters** *i, e,* and *y*
—i.e., the letters that represented front vowels in **late Latin**,
 regardless of what sounds they have now.
So in **modern English**, the rules are often best described in terms of spelling,
 even though they **originated** as rules based on sound.

$$c \rightarrow [s] \: / \: \_\_i, e \qquad g \rightarrow [dʒ] \: / \: \_\_i, e$$

Morphophonological rules often apply **in a specific order**.

E.g., we can use **rule ordering** to describe the behavior of *accept* and *accident*:
the assimilation rule and the c → [s] rule **both** apply,
but we can tell that the **assimilation** must happen **first**!:
- start with *ad-cep-t*
- then assimilation applies: *ac-cep-t*
- **then** the *c* that's before *e* becomes [s]: *ac*[s]*ept*—
    which is how the word is actually pronounced.

If *c* became [s] **first**, and **then** the *d* assimilated to match it,
the result would be *a*[ss]*ept*—which is not the real pronunciation!
Thus these two morphophonological rules must apply **in a specific order**,
and **we can determine** what the correct order is.

Insertion and **deletion** of sounds are common morphophonological patterns;
like assimilation, they're motivated by constraints of **easing pronunciation**
and **avoiding illegal sound sequences**.

Deletion rules can be symbolized as something "changing to zero" (∅).
So a rule like "*s* is **deleted** before voiced consonants" would be symbolized:

$$s → ∅ \ / \ \_\_voiced\ C$$

(This rule applies frequently to Latin morphemes:
jus- 'law', as in *jus-tice*, drops its *s* and appears as *ju-* before *d* in *ju-dicial*.)

In **sequences of vowels**, the **first** one is often deleted: V → ∅ / __V
—**especially** if it's **not the only vowel** in the morpheme.
(This can also happen if there's an *h* in between: V → ∅ / __*h*V)
E.g.: *cata-* + *-hode* = *cathode*; *cello* + *-ist* = *cellist*; *meta-* + *-onym* = *metonym*

Deletion rules often serve to simplify complex **clusters of consonants**,
reducing sequences of three or more consonants to two (or just one!).
There are a bunch of different ways this can happen—
some delete the first consonant, some the middle one, some both—
and different rules apply to different consonants or different morphemes.
E.g.:

C → ∅ / C__C   deletion of a consonant **between** two consonants
this happens to *fulg-* 'lightning, glow' in *ful-min-ate*.

C → ∅ / __CC   deletion of a consonant **before** two other consonants
this happens to *con-* 'together' in *co-gn-ate*.
(Recall *-gn-* is the **zero grade** of *gen-* 'birth'! **Cognate** words **share an origin**—i.e., a birth.)

A frequent pattern is C → ∅ / __sC:
> delete a consonant when it's followed by *s* **plus another consonant**:
> *sub-* + *spec-t* = *suspect*
This one has **many exceptions**, however: *sub* + *sta-nce* = *substance*, not "*sustance*".

The **combination** of this rule with the rule of *s*-deletion before voiced consonants
> is what gives *ex-* 'out' its allomorph *e-*.
Consider the word *emit*, which consists of *ex-* plus *mit* 'send':
- start with *ex-mit*—i.e., *e*[ks]-*mit*
- **delete the [k]** because it's before *s* plus a consonant: *e*[s]-*mit*
- **then** delete the [s] because it's before a voiced consonant: *e-mit*

Sounds can also be **inserted** to simplify transitions from one sound to another.
> We symbolize this as "zero" **becoming some sound**.

E.g., ∅ → *p* / *m*__*t*   *p* is **inserted** between *m* and *t*.
> This happens in *pre-sum* + *tion* = *presumption* and *red-em* + *tion* = *redemption*.

The insertion of **empty morphs** between morphemes in a compound happens for
> similar reasons, though we don't consider it the same process as allomorphy:
the *-o-* in *path-o-log-y* and *-i-* in *omn-i-pot-ent* help **separate** the content morphs,
> for clarity and ease of pronunciation.

Many of the common insertion rules are **not very general**—
> i.e., they don't apply to many words, or have a lot of exceptions—
> but they're still worth being able to recognize.

For instance, *d* may be inserted before a vowel **after the prefixes *re-* and *pro-*:**
> ∅ → *d* / *pro*__V   ∅ → *d* / *re*__V
Examples:
> *re-* + *-em-* + *-tion* = *redemption*   (*-em-* means 'buy')
> *re-* + *und-* + *-ant* = *redundant*   (*und-* means 'wave')
> *pro-* + *ag-* + *-al* = *prodigal*   (*ag-* means 'drive' or 'do')

s is often inserted **between *b* and a voiceless stop**:
> ∅ → *s* / *b*__voiceless stop
Examples:
> *ab-* + *cond* = *abscond*   (*cond-* means 'put')
> *ab-* + *trac-* + *-t* = *abstract*   (*trac-* means 'pull')
> (But note it doesn't happen in *subtract*! The rule has a lot of **exceptions**.)

In a few words, **cluster simplification** applies **after** *s*-insertion:
> *sub-* + *pend* → *subs-pend* → *suspend*.
> *ob-* + *tens* + *-ible* → *ob-stensible* → *ostensible*

Many common morphophonological rules fall into none of these categories:
  e.g., Latin vowel weakening, which we've discussed before:
  in **non-initial syllables**, *a* → *e*   **and then** *e* → *i* / __CV

Note this means *a* becomes *e* and stays *e* when followed by **two** consonants—
  cap → *cep* in *re-cep-tion*   *fac* → *fec* in *con-fec-tion*
—but it ends up as *i* when followed by only **one** consonant:
  cap → *cip* in *in-cip-ient*   *fac* → *fic* in *ef-fic-ient*

Other morphophonological processes sometimes **interfere** with the result of vowel weakening:
  e often appears instead of *i* before *r*:   *fer-*, not "*fir-*", appears in *con-fer-ence*
  i usually appears instead of *e* before *ng*:   *-ting-*, not "*-teng-*", appears in *con-ting-ent*
  e usually become *u* before *l* plus another consonant:
    sal- becomes *-sul-* in *in-sul-t, re-sul-t*   *pell-* becomes *pul-* in *com-pul-sive, pro-pul-sion*

Another common morphophonological rule from Latin is known as **rhotacism**:
  s → *r* / V__V   *s* becomes *r* **between two vowels**.
Examples:
  rus- + *-al* → *rural*   (*rus-* means 'countryside'; cf. *rus-tic*)
  jus- + *-y* → *jury*   (*jus-* means 'law'; cf *jus-tice*)

There are many other common morphophonological patterns of allomorphy
  discussed in detail in the textbook!

One morpheme may have **many phonologically conditioned allomorphs**,
  for the different phonological contexts it can appear in.
Thus *jus-* 'law' appears as:
  • *jus-* before a voiceless consonant: *jus-tice*   (basic allomorph)
  • *jur-* before a vowel: *jur-y, jur-isdiction*   (rhotacism)
  • *ju-* before a voiced consonant: *ju-dicial*   (cluster simplification)

Again, note that most morphophonological rules **have exceptions**,
  but they're still **common enough** to be worth **recognizing**.
For instance, *tag-* 'touch' undergoes **vowel weaking** in *con-tig-uous*,
  but not in *con-tag-ious* or *con-tac-t*—but not for any good reason.
  As far as we're concerned, it's just a **random exception** to the pattern.
  (But note that it **does** undergo **voicing assimilation** in *contact*!)
But knowing **that vowel weakening exists** and is a common process
  will help you **remember,** when *-tig-* **does** occur, that it's an allomorph of *tag-*.