Midterm exam

- Exam covers chapters 1–7 of Haspelmath and class notes
- Homework problems + essays
- In class part: Wednesday, March 16
- Take home part: due Monday, March 21
- Both parts are open book, but:
  - You still need to study
  - Don’t work in groups

Morphology

- Morphology is the study of the systematic covariation in the form and meaning of words.
- Morphology as battleground
- Morphology as rain forest
- What is a word?
  - Orthographic words
  - Phonological words
  - Syntactic words
  - Semantic words

Words

- We can also distinguish between notions of ‘word’ by the level of abstraction
- A lexeme is a ‘dictionary word’, an abstract entity (emic category), written in SMALL CAPS
- A word form is a concrete orthographic or phonological (or . . . ) entity
- A morphosyntactic word is a particular combination of morphosyntactic features
- A paradigm is a set of word forms that belong to a particular lexeme

Meaning relations

- Two main types: inflection and derivation
- Inflectional morphology relates word forms that belong to a single lexeme
- Inflectional categories vary a lot by language, but typically include
  - inherent properties, e.g., tense, mood, or number
  - government properties, e.g., case, agreement
  - concord properties
Derivational morphology

- Derivational morphology relates lexemes
- Functional derivation
  - act-or
- Featural derivation
  - act-r-ess
- Category-changing derivation
  - new new-ness
  - budget budget-ary
- Valence changing derivation

Morpheme

- Many kinds of form/form and meaning/meaning relations
- Where does this leave morphemes as “the smallest meaningful constituent”?
- Three approaches
  - Morphemes as things, sometimes very abstract
  - Morphemes as rules, usually affixation
  - No morphemes, just relations among words

Allomorphy

- The shape of a morpheme varies (often in complex ways) with its context
- Phonological rules may may have different effects, depending on the morphological environment (German final devoicing)
- Some variation is phonologically conditioned, but not purely phonological (English plurals)
- Allomorphy may also be morphologically conditioned

Morphemes

- Allomorphy raises problems for morphemes as minimal signs
- Other problems
  - Cumulative exponence mont-em ‘mountain-ACC.SG’
  - ‘Cranberry’ morphs re-ceiv-er
  - Overlapping morphs vom Faß = von dem Faß
  - Portmanteau morphs go-ed = went
  - Empty morphs baker’s dozen
Morphophonology

- Item and Arrangement = morphemes + tactics
- This obscures phonological relationships (knife / knives)
- One solution: morphophonemes (internal reconstruction)
- Item and Process = morphemes + rules
- Both models have their strengths:
  - IA is simple, but treats all variation as suppletion
  - IP is general, but treats all variation as phonology
- A third model, Word and Paradigm, takes the notion of an inflectional paradigm as central

Post-structuralist linguistics

- Structuralist model
  phonetics : phonology : morphophonology : morphology : syntax
- Chomsky and Halle adopt an IP-like model which merges phonology and derivational morphology into one module
- ‘Affix hopping’ incorporates inflectional morphology into syntax
- Early generative model
  phonetics : phonology : syntax

“Remarks”

- In early generative grammar, syntactic variation arose through the application of transformations
  Pat criticizes the book $\rightarrow$ The book was criticized by Pat
- Transformations are (almost) completely regular, with consistent changes in form and meaning
- Gerundive nominalizations, like passives, are very predictable
  Pat criticizes the book $\rightarrow$ Pat’s criticizing the book
- Derived nominalizations are like gerunds in many respects:
  Pat criticizes the book $\rightarrow$ Pat’s criticism of the book

“Remarks”

- We have a distinction between:
  - transformations, which are completely predictable, and
  - lexical entries, which are listed
- Derived nominalizations seem to be somewhere in between
- Chomsky’s proposal was that derived nominalizations be formed in the lexicon, but that any regularities could be captured by lexical redundancy rules
- Strong vs. Weak Lexicalist Hypothesis
“Prolegomena”

- Halle’s “Prolegomena to a theory of word formation” takes up Chomsky’s challenge
- IA model, with a list of morphs feeding into a set of tactic rules
- Non-occurring forms (*-arivation) removed by filter
- Dictionary lists occurring and non-occurring forms
- Halle’s final model

```
List of morphs -> WFRs -> Filter -> Dictionary -> Syntax
```

```
Output -> Phonology
```

Word-based morphology

- WFRs put various syntactic, semantic, phonological, and morphological constraints on the base
- Adjustment rules modify the phonological form of a word, conditioned by the presence of certain morphemes
- WFRs can be applied in reverse to get at the ‘root’ of words like tangible and fungible
- Knowledge of WFRs can be used to produce back-formations like babysit
- Some forms are predicted, others are motivated

No list of morphs: only free forms are listed
- WFRs are schemata for producing new words out of old words
  
  \[X_\text{v} \text{-er}]_N \text{ ‘one who Xs habitually, professionally, etc.’} \]
- The output of a WFR can be stored in the dictionary
- Once listed in the dictionary, a word is able to pick up unique properties
- Completely predictable words formed by wholly productive WFRs don’t have to be listed (e.g., -ly)
Morphological change

- Back-formations, et al. are not really the result of WFRs, but of things we do with WFRs
- Similar processes (both conscious and unconscious) lead to morphological changes in language
- Haspelmath distinguishes four types:
  - Pattern loss
  - Coalescence
  - Analogical Change
  - Reanalysis

Productivity

- Word-based Morphology has no Filter, so WFRs need to be carefully restricted
- Aronoff compared the de-adjectival noun suffixes -ness and -ity as they combine with -ous
- Phonological
  - sérious sériousness
cúrious curiósity
várIOUS várIETY
- Lexical
  - nebulous nebulosity
crédulous crédulity

Blocking

- For some words, we can predict that -ity won’t apply
  - glorious *gloriosity gloriousness
  - furious *furiosity furiousness
  - gracious *graciosity graciousness
  - fallacious *fallaciousity fallaciousness
  - acrimonious *acrimoniosity acrimoniousness
- The existence of a noun (glory, fury, ...) blocks the formation of a synonym
- Panini’s Principle (aka Elsewhere Condition): A more specific rule trumps a more general rule
- Completely predictable forms aren’t listed in the dictionary, so aren’t subject to blocking effects

Inflection

- We’ve been making a distinction between derivation and inflection, but what’s the difference?
- Linguists have identified a number of criteria, but none are definitional
- Inflectional morphology relates word forms of a lexeme, derivational morphology relates word forms
- Inflection is relevant to the syntax, derivation is not
- Derivational morphology (unlike inflectional morphology) can change the major category of a word
- Inflection is obligatory, while derivation is optional
Inflection

- Derived forms (unlike inflected forms) can be replaced by a monomorphemic form
- Derived forms (unlike inflected forms) express a ‘new concept’
- Derivational morphology has a more concrete meaning than inflectional
- Inflectional morphology (unlike derivational morphology) applies without arbitrary restrictions
- Inflection is semantically regular, derivation is often irregular
- Derivation tends to induce more base allomorphy than inflection

Inflection

- Paraphasias can affect the ability of speakers to inflect or derive words differently
- Inflection and derivation may trigger different phonological readjustment rules
- Derivational rules are recursive, but not inflectional rules
- Derivational rules can apply in more than one order, inflectional rules have a fixed order
- Order varies between languages, but there are strong cross-linguistic tendencies
- Derivational morphology applies before inflectional morphology

Inflection

- Two general approaches
  - Split morphology: inflection and derivation belong to different modules
  - Continuum: inflection and derivation are descriptive categories, but all morphology is combined into a single module

Split Morphology

- The “split morphology” hypothesis divides morphology between two grammatical components
- Lexicon produces morphosyntactic words (lexemes plus features):

  IMPERATOR3sg  SALUTARE3sg  POPULUS3sg
  ‘emperor’    ‘greet’     ‘people’

- Syntax organizes these into a structure which determines which features are assigned:

  IMPERATORnom/3sg  SALUTARE3sg/perf  POPULUSacc/3sg
  ‘emperor’    ‘greet’     ‘people’

- Spell-out rules select the correct word forms

  Imperator salutavit populum.
Compounds

- **Root compounds** are formed by joining more than one word
- **Synthetic compounds** combine a verb with an argument
- **Endocentric compounds** have a semantic head
- **Exocentric compounds** don’t have a semantic head (metonymy)
- **Appositional compounds** conjoin elements

Stress

- How do we know we’re looking at a compound?
- Compound stress falls on the first element (usually)
  - bláckbird → black bird
  - whitehouse → white house
- In three-part compounds, stress falls on the first element or the second element:
  - [student [film committee]]
  - [[film committee] chairman]
- Stress can disambiguate complex compounds:
  - [governent [[pdy review] policy]]
  - [[governent pay] [review policy]]

Synthetic compounds

- In synthetic compounds, the left daughter fills a semantic role in the meaning of the right daughter
  - truck driver, fast acting, pan fried, moth eaten
- In some languages, noun-verb compounds seem more syntactic
- Mohawk
  - ʼWa’k-hnínu-ʼ ne ka-nákt-a’
  - FACT-1sS-buy-PUNC NE NsS-bed-NSF
  - ʼI bought a/the bed.’
  - ʼWa’ke-nakt-a-hnínu-ʼ
  - FACT-1sS-bed-E-buy-PUNC
  - ʼI bought a/the bed.’

Incorporation

- But, in many ways these do act like English compounds
- **Lexical idiosyncrasies**
  - te-k-ht-ólalak-s
  - DUP-1sS-object-press-ASP
  - ʼI am pressing it.’
  - u-k-y’a-t-ólalak-e’
  - FACT-1sS-body-press-ASP
  - ʼI had a nightmare.’ (lit: it pressed on me)
  - te-ke-list-ólalak-s
  - DUP-1sS-metal-press-ASP
  - ʼI am typing; I am a typist.’ (lit: I press on metal)
Morphology

- Most generative theories of morphology work best for agglutinative derivational morphology: each morph corresponds to an atomic meaning
- Deviations from this ideal can be handled via process morphology, suppletion, etc.
- In contrast, descriptive traditions don’t treat all morphology as agglutination
  - Template morphology
  - Paradigm-based morphology

Position classes

- Pre-Hockett morphological descriptions relied heavily on ‘position classes’
- Najavo (Young and Morgan 1980)

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>IX</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH</td>
<td>ITER</td>
<td>DIST</td>
<td>DO</td>
<td>SUBJ</td>
<td>TH</td>
<td>MODE</td>
<td>ASP</td>
<td>SUBJ</td>
<td>CL</td>
</tr>
<tr>
<td>shi</td>
<td>ni</td>
<td>bi</td>
<td>yi</td>
<td>ha/ho</td>
<td>'a</td>
<td>nihi</td>
<td>i</td>
<td>shi</td>
<td>Ø</td>
</tr>
<tr>
<td>ni</td>
<td>yi</td>
<td>ni</td>
<td>Ø</td>
<td>d</td>
<td>i</td>
<td></td>
<td>i</td>
<td>ni</td>
<td>d</td>
</tr>
<tr>
<td>bi</td>
<td>ni</td>
<td>ø</td>
<td>d</td>
<td>l</td>
<td></td>
<td></td>
<td></td>
<td>i</td>
<td>l</td>
</tr>
</tbody>
</table>

Template morphology

- Simpson and Withgott (1986) contrast layered and template morphology
- Zero morphemes are very common in template morphology, less so in layered morphology
- Layered morphology gives rise to headed structures, template morphology doesn’t
- Layered morphology is limited by adjacency constraints
- Layered morphology doesn’t allow selection of an ‘inner’ allomorph to be constrained by the occurrence of an ‘outer’ morph, but this is common for template morphology

Paradigm functions

- Incremental theories of morphology build up form and meaning in parallel
  
  \[
  \text{walk} / \text{WALK} + s / \text{PL} = \text{walks} / \text{WALK+PL}
  \]
- Realizational theories associate words forms with morphosyntactic words
  
  \[
  \text{WALK+PL} \iff \text{walks}
  \]
- Realizational theories use rules like:
  
  “If +PL, add -s to stem”
- Rules and stems organized into an inheritance hierarchy
Inheritance

• Inheritance is an important organizing principle for many levels of linguistic structure (e.g., HPSG syntax)
• Inheritance relations are often expressed using an “is-a” hierarchy
• Default inheritance allows more specific constraints to override more general ones
• Defaults also play a role via the Elsewhere Principle

Inheritance

Especially prominent in inflectional systems

-s 3sg pres
-ing pres part
-ed past/past part
-Ø elsewhere

walks 3sg pres
walking pres part
walked past/past part
walk elsewhere

Inheritance

By the Elsewhere Condition, we use the most specific realization rule that's applicable

-s 3sg pres
-ing pres part
-ed past/past part
-Ø elsewhere

saw see past
-seen see past part

sees 3sg pres
seeing pres part
saw past
seen past part
see elsewhere

Inheritance

Defaults and inheritance lets us capture arbitrarily complicated irregularities

is 3sg pres
am 1sg pres
are pres
being pres part (-ing)
was 1sg/3sg past
were past
been past part (-en)
be elsewhere (-Ø)
Inflection classes

- Paradigms are often sensitive to inflection classes (e.g., verb conjugations, noun declensions)

<table>
<thead>
<tr>
<th>Case</th>
<th>Noun</th>
<th>Genitive</th>
<th>Dative</th>
<th>Accusative</th>
<th>Ablative</th>
</tr>
</thead>
<tbody>
<tr>
<td>nom sg</td>
<td>insula</td>
<td>equus</td>
<td>operis</td>
<td>dies</td>
<td>dies</td>
</tr>
<tr>
<td>gen sg</td>
<td>insulae</td>
<td>equi</td>
<td>operi</td>
<td>diei</td>
<td>diei</td>
</tr>
<tr>
<td>dat sg</td>
<td>insulae</td>
<td>equo</td>
<td>operos</td>
<td>diem</td>
<td>diebus</td>
</tr>
<tr>
<td>acc sg</td>
<td>insulam</td>
<td>equum</td>
<td>operum</td>
<td>dierum</td>
<td>diebus</td>
</tr>
<tr>
<td>abl sg</td>
<td>insula</td>
<td>equo</td>
<td>operes</td>
<td>diei</td>
<td>diebus</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>Noun</th>
<th>Genitive</th>
<th>Dative</th>
<th>Accusative</th>
<th>Ablative</th>
</tr>
</thead>
<tbody>
<tr>
<td>nom pl</td>
<td>insulae</td>
<td>equi</td>
<td>opera</td>
<td>dies</td>
<td>dies</td>
</tr>
<tr>
<td>gen pl</td>
<td>insularum</td>
<td>equorum</td>
<td>operum</td>
<td>dierum</td>
<td>diebus</td>
</tr>
<tr>
<td>dat pl</td>
<td>insulis</td>
<td>equis</td>
<td>operibus</td>
<td>diebus</td>
<td>diebus</td>
</tr>
<tr>
<td>acc pl</td>
<td>insulas</td>
<td>equos</td>
<td>opera</td>
<td>diei</td>
<td>diebus</td>
</tr>
<tr>
<td>abl pl</td>
<td>insulis</td>
<td>equis</td>
<td>operibus</td>
<td>diei</td>
<td>diebus</td>
</tr>
</tbody>
</table>

Inheritance

- Creating paradigms as objects in our theory lets us represent the fact that not all combinations of morphemes are possible

Paradigm economy

- We can related the whole paradigm using a set of word based WFRs
- But, we still can't describe the similarities among inflection classes
- Default inheritance also lets us express relationships among inflection classes (e.g., Modern Greek)

Paradigm Economy Principle (Carstairs 1987)

The number of inflectional classes is less than or equal to the number of allomorphs in the most varied category.

- Not quite literally true, but inflectional class systems are much less complicated than they could be
Syncretism

- Inflectional paradigms are often show syncretism
- Syncretism is not the same as homonymy
- We can use underspecification to represent natural syncretisms in the grammar
- For non-natural syncretism, we can use rules of referral