Wired Style: *Principles of English Usage in the Digital Age* (ed. Constance Hale, HardWired, 1996) says: “What’s the plural of that small, rolling pointing device invented by Douglas Engelbart in 1964? We prefer ~mouses~. ~Mice~ is just too suggestive of furry little creatures. But both terms are common, so take your pick. We actually emailed Engelbart to see what he’d say. His answer? ‘Haven't given the matter much thought.’

“In fact, Engelbart shared credit for the name with ‘a small group in my lab at SRI.’ Nobody among his colleagues seems to remember who first nicknamed the device, but all agree that the name was given because the cord (‘tail’) initially came out the ‘back’ of the device. ‘Very soon we realised that the connecting wire should be brought out the “front” instead of the back,’ Engelbart notes, but by then the name had stuck.”
The *Microsoft(R) Manual of Style for Technical Publications* (ed. Amanda Clark, Microsoft Press, 1995) says: “Avoid using the plural mice; if you need to refer to more than one mouse, use mouse devices.”

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>computer mice</td>
<td>112,000</td>
</tr>
<tr>
<td>computer mouses</td>
<td>50,300</td>
</tr>
</tbody>
</table>
Level ordering

**LEXICON**

- Dictionary
  - Level 1 morphology → Level 1 phonology
  - Level 2 morphology → Level 2 phonology
  - Level n morphology → Level n phonology
- Syntax → Post-lexical phonology
Level ordering

- For English
  - Level 1: integrated affixes, irregular inflection
  - Level 2: neutral affixes, compounding
  - Level 3: regular inflection
- Post-lexical: clitics
- Other languages may (in theory) differ, but in practice they don’t seem to
Lexical phonology

- Level ordering and the elsewhere principle can explain a lot about English phonology
- But, there are lots of remaining problems
- Technical problems with phonological analyses
- How many levels?
Lexical phonology

- A rule syllabifies word final sonorants
  
  \textit{simple, double, prism}

- Blocked by level 1 and level 2 affixes
  
  \textit{simplify, simplicity, simply, coupler, coupling, burglar, wrinkly}

  but not compounding or inflection

  \textit{double edged, doubling}

- Resyllabification occurs after level 2 derivation
  
  \textit{logicality, dialectology}

  \textit{pickaxes, hot oil}
Lexical phonology

• So, compounding must be on level 3 and regular inflection on level 4

• But, compounding was on level 2 for a reason
  
  *reaircondition, hardheartedness, *motorcyclic*

• A loop?
Affix order

• Affix Ordering Generalization

• An apparent exception

áanalyze  áanalyzable  àanalyzabilité
stándard  stándardize  stàndardización
góvern   góvernment  gòvernméntal
impréssion  impréssionist  imprèssionístic

• From the stress shift, -able, -ize, -ment and -ist must be level 2, and -ity, -ation, -al, and -ic must be level 1!

• Level 1 affixes -ability, -ization, -mental, -istic

  ballistic, cannibalistic, atavistic
  futuristíc, stylistíc
Affix order

• A bigger problem comes from the combination of a level 1 suffix outside a level 2 prefix

  ungrammaticality
  transformational grammarian

• Of the two possible ordering violations, only one occurs:

  \[ I + [\text{Stem} + \text{II}] \]  *in+success+ful
  \[ \text{II} + \text{Stem} \] + I  un+grammatical+ity

• Lots of examples:

  untruth, underestimation, decongestant, vice-presidential

• And non-examples:

  *reanalytic, *wall floral, *tunnel visual
Affix order

• Selectional restrictions must be met at every level
• Reanalysis allows brackets to be freely moved around, so long a selection restrictions are met
• Some forms are exceptionally exempt from the Bracket Erasure Convention
• Reanalysis triggered by the fact that *un-* wants to attach to an adjective

\[
[[\text{grammatical}]_A+\text{ity}]_N \quad \text{Level 1}
\]
\[
[\text{un+}[[\text{grammatical}]_A+\text{ity}]_N]_N \quad \text{Level 2}
\]
\[
[[\text{un+}\text{grammatical}]_A]_A+\text{ity}]_N \quad \text{Reanalysis}
\]
Affix order

• Reanalysis poses lots of conceptual problems

• Part of a more general problem: level ordering only explains a fraction of the affix interactions that the grammar needs to account for

• Fabb (1988)
  • 43 common English suffixes
  • potentially $43^2$ or 1,849 combinations
  • selectional restrictions reduce this to 614
  • AOG reduces that to 459 possible combinations
  • only about 50 are actually attested
Affix order

• Of the 43 suffixes
  • three (-ness, -able, -er) are completely productive
  • 29 (including both Level 1 -ous, -ify and Level 2 -hood, -ish) won’t co-occur with any affixes at all
  • six affixes that attach either to a base stem or to one particular other suffix (-ionary, -ioner, -istic, -ificatory, -ency)
  • lots of remaining idiosyncracies (-ity)
  • Level ordering is both too strong and too weak to account for all of the observed affix co-occurrence restrictions
Bracketing paradoxes

- Examples like ungrammaticality are part of a larger class of problem examples
  
  marine biologist, macroeconomist, moral philosopher, Gödel numbering, cross-sectional, white-washed

- Very common, but only with lexicalized compounds
  
  wooden fluitist, bad grammarian

- Similar to the bracketing puzzles posed by clitics

  Pat’s coming to the party.
Bracketing paradoxes

- The suffix -er is subject to prosodic constraints:
  - redder, sadder, wiser
  - easier, happier, manlier
  - *ecstaticker, *contenter, *speciouser

- The prefix un- combines with adjectives:
  - unexpensive = cheap

- Prosodic and semantic conditions are in conflict:
  - uneasier
  - unwiser
Bracketing paradoxes

- Prosodic structure
  
  \[(\text{the book}) \ (\text{was in an unlikely}) \ (\text{place})\]

- \textit{P-words vs. m-words}

  \[(\text{compart})(\text{mental})(\text{ization})\]

- Some bracketing paradoxes can be seen as mismatches between \textit{p-} and \textit{m-} structure

  \textit{ungrammaticality}
Bracketing paradoxes

- Williams (1981) connects bracketing paradoxes to relations between words

  electric electricity
  hydroelectric hydroelectricity

- Lexical relatedness: X can be related to Y if X and Y differ only in a head position or in the non-head (i.e., leftmost) position

  macroeconomic
  macroeconomist
  microeconomist

- Can handle cases that reanalysis can’t, but relates too many words, and can’t assign a reasonable structure to ungrammaticality
Bracketing paradoxes

- Pesetsky (1985) used bracketing paradoxes to argue against Lexical Integrity.
- Logical Form is a level of semantic representation, to account for the ambiguity of "Everyone liked one of the books."
  by quantifier raising.
- QR also applies to parts of words
  "Tom saw nobody = Tom didn’t see anybody"
Bracketing paradoxes

- Peseteky treats bracketing paradoxes as QR of a suffix
  - unhappier
  - ungrammaticality
- Syntactic/semantic movement rules applying to parts of words
- Many technical problems
  - Why isn’t unhappier ambiguous?
  - Why can’t we say *unfitter?
Bracketing paradoxes

- Sproat (1984) focused on the mismatch between syntactico-semantic structure and phon-morphological form

  *un* gramatikal iti
  \[\{\text{UN, GRAMMATICAL}\} \text{ ITY}\]

- Morphemes are pairs of syntactico-semantic and phono-morphological units

  [un-, UN]
  [-ity, ITY]

- Affixation builds parallel structures subject to the Mapping Principle, which maintains adjacency

- This allows reanalysis, much like what we saw in Lexical Phonology
Bracketing paradoxes

- Why aren’t all paradoxes acceptable?
  
  *symphony orchestrate
  *chairpersonify
  *white elephantine
  *outboard motorize

- In each case, the right-hand side has some idiosyncratic properties (orchestrate, personify, elephantine, motorize), requiring them to be listed in the lexicon

- No derivation means no chance for reanalysis