Roelofs & Baayen 2002, *Psychonomic Bulletin & Review*
"Morphology by itself in planning the production of spoken words"

[This is a flash-forward to our role-of-semantic-relatedness day, snuck in between distributional-factors week and phonological-factors day.]

(1) How long does it take to get ready to say *input***?** *invoice***?** *insect***?**
- Semantic dependency hypothesis: *invoice* and *insect* are the same—their production makes no reference to *in-*; *input*'s does though
- Morphological autonomy hypothesis: "memory organization and encoding algorithms for word production aim at getting the forms right and are not concerned with semantic transparency"
  - → *invoice* and *input* both involve producing *in-*; *insect* doesn't
  - This is the view implemented in the WEAVER++ model of production

(2) WEAVER++ review (Levelt & al. 1999)
- First, conceptualization
- Second, lemma retrieval
  - lemma includes info like singular/plural
- Third, word-form encoding: retrieve morphological and phonological properties to instantiate the lemma's info
  - This stage doesn't care whether the morphological components make a semantically systematic contribution

(3) Implicit priming
- Training: when you see *keyboard*, say *input*; when you see *knowledge*, say *insight*; etc.
- Testing: you see KEYBOARD, apparatus measures how fast you reply *input*
- Then learn another set
- unlike in picture-naming, the target words don't have to be depictable
- In some sets ("homogeneous"), responses share first syllable (*input, insight, inflow*)
- In other sets ("heterogeneous"), no form relationship (*input, misprint, doorstep*)
- Each participant is tested on all sets

(4) Relevant previous implicit priming findings
- Preparation effect: faster responses in homogeneous sets
- Effect is stronger if the shared string in the homogeneous set is a morpheme for all the words in the set
→ We can test whether *invoice* benefits from the preparation effect the way *insect* does (less) or the way *invoice* does (more)

(5) The stimuli here (Dutch)
- Opaque condition: *bijval* 'approval' [opaque], *bijnier* 'kidney' [transparent], *bijzaak* 'side issue' [transparent]
- Simple condition: *bijbel* 'bible' (where *bij* and *bel* are also words) [simple], *bijbann* 'side-line' [transparent], *bijzin* 'subordinate clause' [transparent]
- Transparent condition: *bijvak* 'subsidiary subject', *bijnaam* 'nickname', *bijrol* 'supporting role' [all transparent]

and similarly for the heterogeneous sets

plus similar sets with *na-* and *mis-*

What's being tested: how much faster/more correct is homogeneous than heterogeneous, for each condition? Transparent should be more facilitated than simple, but where does opaque fall?

(6) Results
- All three conditions show preparation effect (for RT, not error rate)
  - That's expected: purely phonological effect
- Transparent shows more preparation effect than simple—good, the method worked!
- Opaque shows preparation effect too, indeed just as much as transparent

Table 1
Mean Production Latencies (in Milliseconds), Error Percentages, and Preparation Effects

Word type	Context					
	Homogeneous		Heterogeneous		Preparation	
	M	E%	M	E%	M	E%
Complex						
Transparent	624	5.6	697	5.5	−73	0.1
Opaque	643	4.7	719	5.1	−76	−0.4
Simple	665	7.1	695	4.1	−30	3.0

(p. 135)

(7) Is it a problem for distributed connectionist models?
- If morphology is just systematic form-meaning correspondences, why should [a word like] *invoice* act polymorphemic?
- Plaut and Gonnerman 2000 are cited. As I mentioned last week, this was a simulation showing that richer morphology could lead to "morphological" effects even in semantically opaque words.

(8) What does this mean for us?
- In production, a word like *invoice* seems to have a special relationship with truly *in-* prefixed words.
- So, its production might be expected to be sensitive to things like the frequency of *in-* (if the transparently prefixed words are), despite the opacity and perhaps lack of shared semantic nodes.
- This also yields another potential method for testing individual words' affixedness—potentially one that could be used in a language that speakers aren't used to writing
  - In order for the testing prompts to be visual, so that we know when the participant gets the information, the training phase would have to associate picture prompts to (auditorily presented) responses