Allomorphy in German verb paradigms (analysis of "conundrum")
Renate Raffelsiefen IDS Mannheim

Lexicon: I assume a lexicon consisting of phonemic representations of words and morphemes, including allomorphs, and a grammar which determines wellformed inflectional paradigms. Lexical representations of verbs may include multiple allomorphs. For unmarked stems (occurring in present tense, indicative, or imperatives) most verbs have a single form (cf (1a,b)), a few have two allomorphs, one "basic" (ST), the other "special" (ST-S) (cf. (2a,b)):

(1) /t^{s}i/$_{ST}$ 'pull', /ʀuf/$_{ST}$ 'call', /høʀ/$_{ST}$ 'hear', /lyg/$_{ST}$ 'lie'

(2)a. {/hɑb/$_{ST}$, /ha/$_{ST-S}$} 'have', {/əʀlœʃ/$_{ST}$, əʀlɪʃ/$_{ST-S}$} 'extinguish', {/ʃtos/$_{ST}$, /ʃtøs/$_{ST-S}$} 'push'

    b. {/lauf/$_{ST}$, /lɔif/$_{ST-S}$} 'run', {/zauf/$_{ST}$, /zɔif/$_{ST-S}$} 'drink (animal)'

    c. {/vaʃ/$_{ST}$, /vɛʃ/$_{ST-S}$} 'wash', {/fal/, /fɛl/}, {/bʀɑt/, /bʀet/} {/ʀɑt/, /ʀet/} 'guess'...+15 other verbs

    d.{/nem/$_{ST}$, /nɪm/$_{ST-S}$ } 'take', {/tʀet/$_{ST}$, /tʀɪt/$_{ST-S}$} 'kick', {/geb$_{ST}$/,/gib/$_{ST-S}$~/gɪp/$_{ST-S}$} 'give'

    e. {/ʃtel/, /ʃtil/} 'steal', {/bəfel/,/bəfil/} 'order', {/ɛs/, /ɪs/} 'eat', {/tʀɛf/, /tʀɪf/} 'meet', ...+21other verbs

    f. {/vɛʀd/$_{ST}$, /vɪʀ/$_{ST-S}$} 'become', {/gɛlt/$_{ST}$, /gɪl/$_{ST-S}$ } 'be valid' {/flɛçt/$_{ST}$,/flɪç/$_{ST-S}$ }, 'braid'

        {/fɛçt/$_{ST}$, /fɪç/$_{ST-S}$} 'swordplay' {/bɛʀst/$_{ST}$, /bɪʀs/$_{ST-S}$}, 'burst' , {/ʃɛlt/$_{ST}$, /ʃɪl/$_{ST-S}$ } 'scold'

Allomorphy is fairly stable only for alternations between low : mid vowels (2c) and mid : high alternations (2d,e,f). Additional peripheral : centralized alternations are rare (2d). Deletion of stem-final /t/, /d/ after C is entirely regular (2f).

      The regularities in (2c,e,f) could be captured within an OT grammar, where stem forms serve as inputs and alternations between basic stems and special stems are determined by constraint ranking. The constraint DISTINCT, which requires distinct basic and special stems, is sandwiched between high-ranking OO-correspondence constraints, which rule out most alternations, and lower ranking OO-correspondence, which allows only low or mid front unrounded vowels to alternate for height and the presence or absence of stem-final /d/, /t/.

 The lexicon also contains affixes {/ə/, /Ø/} '1.sg', {/st/, /əst/} '2.sg', {/t/, /ət/} '3.sg'...}

Inflected verb forms, paradigm structure:

(Data: http://www.coniuno.de/verbtabellen/ger/html/idh_ger_idx3.htm)

LEX	/bɪt/ 'beg'	{/tʀet/$_{ST}$, /tʀɪt/$_{ST-S}$} 'kick'	{/geb$_{ST}$/, /gɪp/$_{ST-S}$}	{/fɛçt/$_{ST}$, /fɪç/$_{ST-S}$}
1sg	/bɪt-ə/	/tʀet-ə/	/geb-ə/	/fɛçt-ə/
2sg	/bɪt-əst/ */bɪt-st/)	/tʀɪt-st/ (*/tʀɪt/, */tʀet-əst/)	/gɪp-st/	/fɪç-st/
3sg	/bɪt-ət/ (*/bɪt/, */bɪt-t/)	/tʀɪt/ (*/tʀɪt-ət/)	/gɪp-t/ (*/gɪp/)	/fɪç-t/ (*/fɛçt-ət/)

Forms can only be chosen from the lexicon!

Constraints: EXPONENCE (e.g. 3rd sg must end in /t/, 2sg must end in /st/) (cf. /tʀɪt/$_{3sg}$, */gɪp/$_{3sg}$),

        ONE-TO-ONE (biunique IO-correspondence relations for morphemes)

        SAME (1 pl = INF (1st plural and infinitive are the same))

        DISTINCT (3.sg ≠ ST (3. sg forms and (basic) stems must differ)

        Occurrence of schwa: *S$_i$S$_i$ >> *Schwa (Schwa is prohibited) (/bɪt-ət/$_{3sg}$, */bɪt-t/$_{3sg}$)

Analysis:

EXPONENCE >> 3.sg ≠ ST >> *SCHWA >> ONE-TO-ONE

  (accounts for /tʀɪt/$_{3sg}$, /gɪlt/$_{3sg}$(*/tʀɪtət/, */fɛçtət/ violate *Schwa), /bɪt/$_{3sg}$ is out as it violates 3.sg ≠ ST

EXPONENCE >> 2.sg = 3.sg >> *SCHWA

    (accounts for /bɪt-əst/$_{2sg}$ (*/bɪt-st/$_{2sg}$ exhibits unnecessary deviation from /bɪt-ət/$_{3sg}$)

(cf. English past tense /kɐt/ 'cut' violates ONE-TO-ONE but not EXPONENCE, as it ends in /t/,d,)

Independent evidence: imperatives (singular)

      Imperatives are always identical to special stems with /i/, /ɪ/ (/əʀlɪʃ/! extinguish!, ɪs/! eat!, /tʀɪt/! kick!, all without schwa as 3sg has no schwa)), unless these stems are incomplete (*/vɪʀ/! become!, */fɪç/! swordplay!). The default is Imp = 1sg (e.g. /vɛʀdə/! become!, /fɛçtə/! swordplay!, /bɪtə/! beg!, all with schwa whenever 1sg has schwa)). This generalization refers directly to the lexical distinction in (2e) vs. (2f), but is difficult to capture in a derivational model.