Linguistic Theory in the Information Age: The Case of Allomorphy

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CLEAR = Cognitive Linguistics:
Empirical Approaches to Russian
Allomorphy: Traditional Definition

• 2 or more morphemes
  - with same meaning
  - in complementary distribution
  (Bloomfield 1935: Chapters 10 & 13; Matthews 1974: Chapter V)

• Usually these are morphemes that are etymologically related but have undergone sound changes in complementary environments
Examples of allomorphy

• allomorphs of the root *knig*- ‘book’ in the following forms which differ in their final consonants: *kniga* [kn’ig–] (Nsg), *knige* [kn’ig’–] (Lsg), *knig* [kn’ik–] (Gpl), *knižka* [kn’iš– ] (dim Nsg), *knižek* [kn’iž–] (dim Gpl)
  – final segment of morpheme can be g, g’, k, š or ž

• allomorphs of dative singular marker: *studentu* [u] ‘student’, *studentke* [e] ‘student (fem)’, *dveri* [i] ‘door’
  – morpheme can be u, e or i
Examples of allomorphy

• allomorphs of past tense marker: *pisal* [l], *pisala* [l], *pisali* [l’] ‘he, she, they wrote’; *nes* [Ø], *nesla* [l], *nesli* [l’] ‘he, she, they carried’
  – morpheme can be l, l’ or Ø

• allomorphs of the plural marker in English: *cat*[s], *dog*[z], *dress*[əz], *sheep*, *deer*, *fish*
  – morpheme can be s, z, əz or Ø

• allomorphs of the indefinite article in English: *a* cup, *an* idea
  – but one also finds examples like *a* elephant
But: reality is messy

• Even many standard examples of allomorphy fail to conform to the strict definition. Instead we find:
  – the meaning is slightly different
  – the distribution is not perfectly complementary

• And there are examples of form–meaning relationships that are usually overlooked
Range of conformity to criteria

- Non-identical meaning
  - Minimal or no deviation on both criteria
  - Identical
- Non-complementary distribution
  - Non-identical meaning and non-complementary distribution
  - Non-comp.

Third dimension: similarity of form

- Complementary
- Distribution
An example: semelfactive verbs (meaning ‘do X once’) in Russian

- The prefix *-nu* and suffix *s-* serve (approximately) as allomorphs in the formation of semelfactive verbs in Russian
  - NOT etymologically related
  - NOT identical meaning
  - NOT complementary distribution

... but good candidates for non–prototypical allomorphy
-nu database

- 296 imperfective verbs that form -nu semelfactives
  - collected by Anastasia Makarova
  - includes both -nu and -anu semelfactives like pleskat’ ‘splash’ which forms plesnut’ and pleskanut’ ‘splash once’
  - includes both reflexive and non-reflexive verbs like kačat’/kačnut’, kačat’sja/kačnut’sja ‘rock/rock once’
105 Imperfective verbs that form $s-$

- collected by Laura Janda with help from Anastasia Makarova
- includes eleven motion verbs such as $xodit’/sxodit’$ ‘walk/ walk someplace and come back once’
- includes both reflexive and non–reflexive verbs such as $lovčit’/slovčit’, lovčit’sja/slovčit’sja$ ‘be cunning/do something cunning’
Are –nu and s– allomorphs?

• Are –nu and s– in complementary distribution?
  – Almost: verb classes largely determine the distribution of –nu and s–

• Do –nu and s– have the same meaning?
  – Almost: there are some verbs that use the two morphemes synonymously and Isačenko (1960) describes semelfactives formed with –nu and s– with the same term: odnokratnye ‘one–time’
Are \(-nu\) and \(s-\) in complementary distribution?

- The distribution of verb classes of imperfectives that form semelfactives with \(-nu\) vs. \(s-\) was analyzed by means of a chi-square test, and the results are statistically significant:
  - the chi-square value is 257.3 with 5 df
  - the probability that this distribution is the result of mere chance is \(< 2.2e-16\) (statistically = 0)
  - Cramer’s V (effect size) = 0.8 (very large)
Verb classes that prefer –\textit{nu}:

- \textit{aj}:
  - \textit{Zevnul} ‘He yawned once’

- \textit{non-prod 1. conj}:
  - \textit{Liznula} ‘She licked once’

- \textit{*ě}:
  - \textit{Svistnula} ‘She whistled once’
Verb classes that prefer \textit{s-ova}:

\textit{Smalodušestvoval} ‘He did one cowardly thing’

Verb classes that prefer \textit{s-i}:

\textit{Sgrubil!} ‘He did one rude thing!’

Verb classes that prefer \textit{s-ěj}:

\textit{Srobela?} ‘Was she shy once?’
Complementary distribution: summary

• The distribution is not perfect, but statistically it is pretty close

• For two classes there is a perfect distribution: verbs in the non-productive 1. conjugation use only –nu, and verbs with –*ěj use only s–

• For the other suffixes we see strong tendencies, but there is overlap, especially for verbs with the suffixes –ova and –i
Do $-nu$ and $s-$ have the same meaning?

- Both can mean ‘do X once’
- One verb forms synonyms with both $-nu$ and $s-$: $xvastat’/xvastnut’/sxvastat’ ‘boast/boast once’
- A couple of verbs can use both $-nu$ and $s-$ simultaneously: $metat’(sja)/smetnut’(sja), ‘leap sideways/leap sideways once’, $trusit’/struxnut’, ‘be a coward/be a coward once’

$Xvastnul ili sxvastal?$
‘Did he boast once?’
-nu and s– are not identical in meaning

• With -nu we usually have one cycle from a series of repeated events: čixat’/čixnut’ ‘sneeze/sneeze once’, lizat’/liznut’ ‘lick/lick once’

• With s– we often have something that only happened once malodušestvovat’/smalodušestvovat’ ‘act like a coward/act like a coward once’
Evaluation of the allomorphy hypothesis

- Are $-nu$ and $s-$ in complementary distribution?
- Do $-nu$ and $s-$ have the same meaning?
- Is the allomorphy hypothesis confirmed?
- Is the cluster model confirmed?

- Almost.
- Almost.
- Pretty much.
- Pretty much.
Back to the big questions...

• What constitutes allomorphy?
• Complementary distribution is traditionally considered an all-or-nothing criterion for allomorphy.
• But is this expectation realistic given that language phenomena often exhibit scalar characteristics?
• And is meaning ever entirely identical?
The traditional definition...

- was proposed long before the advent of electronic corpora and statistical software
- perhaps should be re-evaluated as a prototype rather than as an absolute criterion
- statistical methods make it possible to establish standards for evaluation of gradient phenomena
- similar considerations might be appropriate for other definitions, such as those of allophony, markedness, and neutralization
“Neat Theories, Messy Realities”
A project funded by the
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Proposal:
1. Investigate a range of form–meaning relationships and how they do/do not conform to the def. of allomorphy

2. Establish standards for recognizing and rejecting allomorphy, thus optimizing our understanding of the structure of languages
Range of domains for complementary distribution

- Phonological
- Morphological
- Constructional
- Discourse functional
- Sociolectal
Neat Theories, Messy Realities

• Products:
  • **Book**: *All About Allomorphy*
  • Articles
  • Publicly Available Databases
  • Website with Interactive Pedagogical Materials
  • 2 PhD dissertations
  • **Symposium** “Allomorphy, discreteness, and continuity” 2014
Examples of case studies completed or underway so far (CLEAR group)

- s–/–nu semelfactives
- Dropping vs. non-dropping –nu
- Russian “empty” prefixes
  - prefix variation
  - constructional profiles of Locative Alternation verbs
  - radial construction profiles of “small” prefixes
  - semantic profiles of “big” prefixes
Examples of case studies completed or underway so far, dissertation by AB

- **Russian verbal morphology**
  - prototypical allomorphy: \( ot/oto, raz/ras \)
  - non-prototypical: \( o/ob/obo, pere/pre, vz/voz, s/so, vy/iz \)
  - factitive verbs (deadjectival) with prefixes \( o, u, za, s, po, \) etc.
  - imperfectivizing suffixes \( a, va, iva \)
Examples of case studies completed or underway so far, dissertation by AM

• **Russian diminutives**
  • Nouns: *iško/oško; raz/ras*
  • Adjectives: *en’kij; (ov)atyj*
  • Adverbs: *en’ko/ečko*
  • Verbs:
    • prefixes *pri, vz, s, pro, po, pere* + *−nu*
    • prefixes *po, pri, pod* + *iva*
    • *kušan’kat’, spaten’kat’, bain’kat’*