The place of morphology in grammar: Historical overview
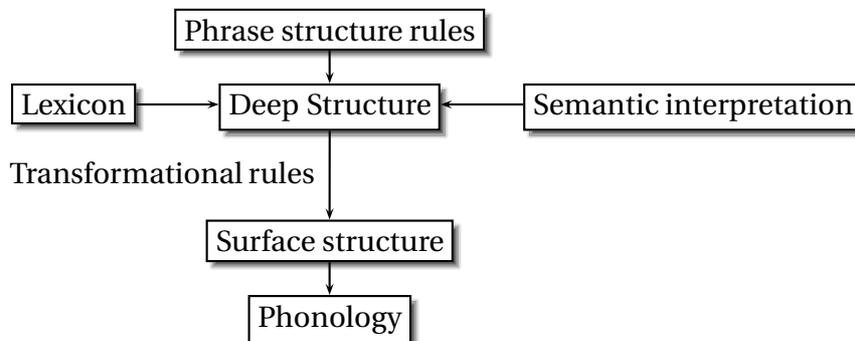
1 The Standard Theory

- The structure of the aspects model, cf. Chomsky (1965)

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                  ┌─────────────────────┐
                  │ Phrase structure rules │
                  └─────────────────────┘
                            │
                            ▼
┌─────────┐      ┌─────────────────┐      ┌───────────────────────┐
│ Lexicon │─────▶│ Deep Structure  │◀─────│ Semantic interpretation │
└─────────┘      └─────────────────┘      └───────────────────────┘
                            │
Transformational rules      │
                            ▼
                  ┌─────────────────┐
                  │ Surface structure │
                  └─────────────────┘
                            │
                            ▼
                    ┌───────────┐
                    │ Phonology │
                    └───────────┘
```

- Lexical insertion is part of the transformational rules (in fact the first one): items from the lexicon are inserted into appropriate terminal nodes (if they match the categorial specification of the node; further restrictions are encoded in the lexical entries of the words, e.g. subcateogrization)

- processes like agreement and concord are also transformational rules: features are copied from the controller (e.g. DP) to the target (e.g. verb)

- agreement morphemes realize the syntactic features in phonology (= late insertion)

- the lexicon contains only simple words, but no compounds or derived words. All word formation is therefore handled in syntax: e.g. nominalizations are derived from underlying finite verbal sentences, the nominalizing morphology is thus a by-product of a transformation

  (1) a. Tom gave a rose to Harriet. →
     b. Tom's gift (of a rose) (to Harriet)
     c. Tom's giving of a rose (to Harriet)

- even nominal compounds like *manservant* were derived from full sentences (cf. Lees (1960)):

  (2) a. Archie needs [a servant [the servant is a man]] →
     b. Archie needs [a servant [who is a man]] →
     c. Archie needs [a servant [a man]] →
     d. Archie needs [a servant man] →
     e. Archie needs a manservant.

→ Morphology was divided up between phonology (inflectional morphology) and syntax (derivational morphology)

2   Remarks on nominalizations: the weak lexicalist hypothesis

- Chomsky (1970): the need for a separate theory of derivational morphology

- transformations should capture regular correspondences between linguistic form, idiosyncratic information belongs in the lexicon

- a transformation should capture productive and regular relationships between sentences, e.g. the passive transformation: applies to almost all transitive verbs, the object is promoted to subject, and both structures have very similar interpretations

- derived nominalizations must be distinguished from gerundive nominalizations: while the latter are regular and transparent, the former are morphologically, syntactically and semantically idiosyncratic:

  (3)   gift vs. giving; destruction vs. destroying

→ only gerundive nominalizations can be derived transformationally, derived nominalizations are not derived, they are listed in the *lexicon*

- syntactic differences:

  - gerundives inherit the subcategorization properties of the verb, while this is not generally true of the derived nominalizations:

    (4)   a.   Tom amused the children with his stories.
            b.   Tom's amusing the children with his stories …
            c.   *Tom's amusement of the children with his stories …

  - gerundives are modified by adverbials, like verbs, while derived nominalizations are modified by adjectives, like nouns (they can also take plural morphology):

    (5)   a.   Dick sarcastically criticized the book.
            b.   Dick's $\left\{ \begin{array}{l} \text{sarcastically} \\ \text{*sarcastic} \end{array} \right\}$ criticizing the book.
            c.   Dick's $\left\{ \begin{array}{l} \text{*sarcastically} \\ \text{sarcastic} \end{array} \right\}$ criticism of the book.

    (6)   a.   John's three proofs of the theorem
            b.   *John's three provings of the theorem

- Semantic differences

  - gerundive nominalization: derivable compositionally from the underlying verb

  - derived nominalizations add some component of meaning which is generally unpredictable

    (7)   a.   Tom's stories provided endless amusement.
            b.   The children spent all their pocket money on the amusements.

    (8)   a.   *Tom's stories provided endless amusing.
            b.   *The children spent all their pocket money on the amusings.

(9)   a.   try, trying, trial
      b.   marry, marrying, marriage
      c.   revolve, revolving, revolution
      d.   construct, constructing, construction

- Morphological differences

  - gerunds can be formed from any verb by adding *-ing*, but not all verbs have derived nominalizations, i.e. there are lexical gaps:

    (10)   a.   John is easy to please.
           b.   John's being easy to please
           c.   *John's easiness to please

    (11)   a.   John is eager to please
           b.   John's being eager to please
           c.   John's eagerness to please

  - derived nominalizations are formed in all sorts of ways (various suffixes) and often involve drastic allomorphy or suppletion:
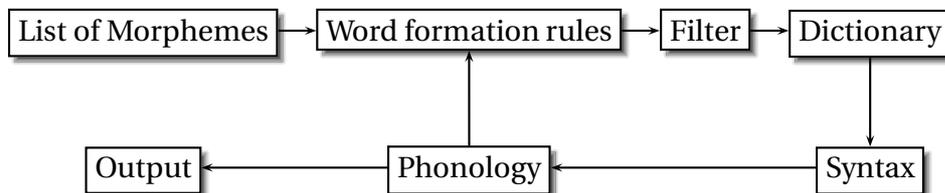
    (12)   gif-t, destruct-ion, critic-ism, amuse-ment

→ the observations apply to most derivational processes

→ the lexicon is no longer just a list of exceptions but rather becomes a generative component in its own right that deals with regularities of word structure

→ given the Extended Lexicalist Hypothesis, transformations cannot operate on parts of words

→ the similarities between gerundive and derived nominalizations, e.g. the thematic relations (the NP preceding the nominalization is the agent) are related to the fact that both the verb *destroy* and the noun *destruction* are related to the same lexical entry *destr-*

→ the thematic similarities led to the development of X'-theory: external arguments are realized as specifiers, internal ones as complements, either of V or of N.

- inflectional morphology was still post-syntactic, i.e. part of phonology → the split-morphology hypothesis

3   Halle's prolegomena: the strong lexicalist hypothesis

- Halle (1973): All morphology is pre-syntactic and takes place in the lexicon

- The lexicon is more complex:

  - list of morphemes
  - word formation rules (e.g. $[VERB+al]_A$)
  - Dictionary = the list of actually occuring words
  - Filter: filters out words that can be generated by the word formation rules but do not occur like *derival, *refusion, *confusal

- inflectional morphology is also handled by word formation rules

  - inflectional morphology can also be idiosyncratic

    * Some Russian nouns receive a special meaning in the instrumental 'during', e.g. *letom* 'during the summer', *zimoj* 'in the winter' but *augustom* does not mean 'during August'
    * phonological rules depending on inflection classes (nouns or certain parts of the paradigm have to be marked for undergoing special phonological processes)
    * defective paradigms, e.g. 100 Russian verbs lack the 1st singular of the non-past tense

  - problem: inflectional features of a word are determined by the syntactic context, but the word formation rules precede the syntax

  - solution: partial/entire paradigms are inserted, the inappropriate forms are then filtered out at the level or surface structure (= some form of feature checking)

- Phonological information can be necessary for word formation rules → there must be a link back from phonology to the lexicon

  - phonologically conditioned allomorphy rules: Hungarian 2nd person: *-ol* (after stems ending in a sibilant) vs. *-(a)sz* (elsewhere)

  - word formation rule sometimes depend on later phonological rules: *-en* attaches to monosyllabic stems that end in an obstruent (optionally preceded by a sonorant)

    (13) a. red – redden, black – blacken, short – shorten; slow – *slowen, apt – *apten
          b. but: soften, moisten, fasten: phonological rule deletes /t/ (look-ahead?)

```
List of Morphemes → Word formation rules → Filter → Dictionary

                           ↑                            ↓
Output ← Phonology ←────────────────────────────── Syntax
```

4 Siegel's level ordering hypothesis

- later it became clear that the interaction between phonology and morphology is more pervasive so that assigning them to different components is problematic → the word-formation component, which is located in the lexicon, also contains the Phonology (except for very superficial phonological processes, which apply post-syntactically) → most formal properties of words are determined before they enter syntax

- the structure of the word-formation component became more and more elaborate:

- Siegel (1979) argues that different types of affixes, which behave differently with respect to phonology/morphology belong to different blocks/components/modules

    - Class I: -ion, -ity, -y, -al, -ic, -ate, -ous, -ive
    - class II: -ness, -less, -hood, -ful, -ly, -y, -like

- Class I affixes trigger phonological processes, i.e. stress shift and vowel alternations, Class II affixes do not:

    (14)   a.   próduct – prodúctive – productívity – prodúctiveness
            b.   frágile – fragílity – frágileness
            c.   deríve – derivátion

- Class I affixes appear closer to the root than Class II affixes: Affix ordering generalization (cf. Selkirk (1982): *hopefulity* but *natur-al-ness* (I+II), *hope-ful-ness* (II+II)

- The components of compound words behave rather like Class II affixes, they don't accept Class I or Class II affixes but they accept regular inflections:

    (15)   a.   *com+passion fruit, *passion fruit-y
            b.   [house boat]-s, [[emulsion paint]-ed]

- rule ordering: Extended Level Ordering Hypothesis (Allen (1978)

    (16)   a.   Level I (Class I affixation)
            b.   Stress rules
            c.   Level II (Class II affixation)
            d.   Level III (compounding)
            e.   Level IV (regular inflection)

- Level ordering thus differentiates between derivation and inflection without assigning the two to different components, i.e. both are part of the lexicion

- level ordering was later built into Lexical Phonology, cf. Kiparsky (1982*a*), Kiparsky (1982*b*)

- another example for level ordering: verbs derived from nouns by conversion never conjugate as strong verbs, e.g. ring a bird:

    (17)   a.   They rang the bell.
            b.   They ringed the bird.
            c.   grandstanded vs withstood

- proposal: irregular inflection takes place at a different level than regular inflection:

(18)   Level ordering involving verbs converted from nouns

grandstand	*withstood*	Level
V>N Conversion: $\text{stand}_V \rightarrow \text{stand}_N$	past tense: stand → stood	1
Compounding: grand+stand_N	Compounding: with+stood	2
N>V Conversion: $\text{grandstand}_N \rightarrow \text{grandstand}_V$		2
Regular past tense: grandstand+ed		3

- problems for level-ordering

    - plural inflection before compounding:

    (19)   systems analyst

    - an entire phrase is compounded:

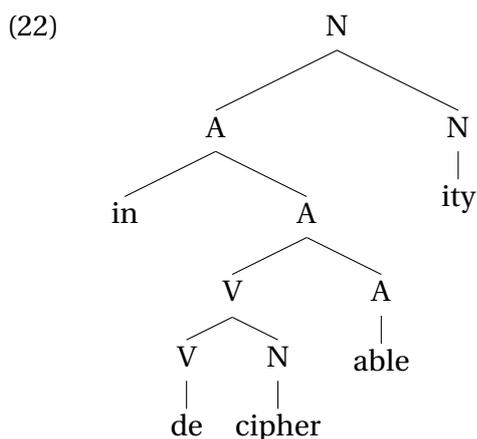   (20)   car-of-the-month competition

    → there has to be a way for looping back to an earlier stage, i.e. a complex object created at some level can again be fed into a process applying at an earlier level

    - exceptions to level-ordering:

    (21)   a.   root-II-I: organ-ize-ation
            b.   [II-root]-I: un-grammatical-ity

5   Constituent structure in morphology

- Proposals that words contain internal structure similar to syntactic constituents can be found in both lexicalist as well as syntactic accounts; they differ as to whether the words are derived in the lexicon or in the syntax

(22)

```
                      N
                ┌─────┴─────┐
                A           N
            ┌───┴───┐       │
           in       A      ity
               ┌────┴────┐
               V         A
           ┌───┴───┐     │
           V       N    able
           │       │
          de     cipher
```

5.1 Accesssibility of internal structure

- such structures represent the derivational history – but the internal make-up of words is normally not accessible to morphological processes, e.g: one does not find rules like: add affix X to an adjective only if it is derived from a noun → affixation is sensitive only to the properties of the node immediately adjacent to the affix

- is there any independent evidence for the constituency apart from the derivational history? there is no movement or deletion in morphology:
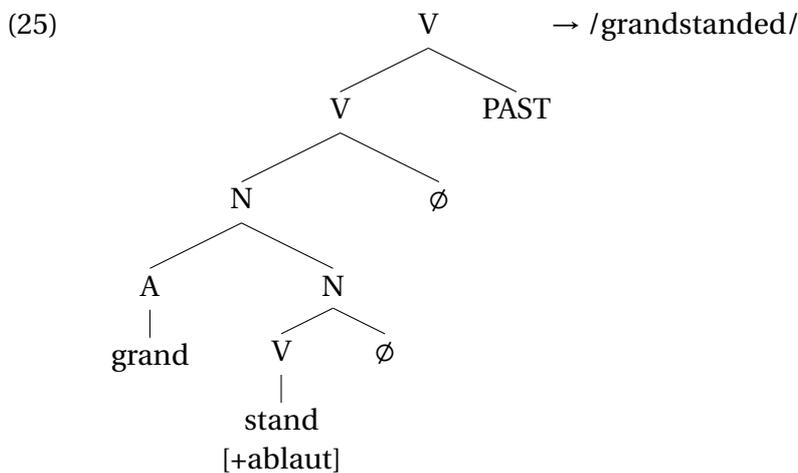
  (23)   *Morphology, she would never give a __ lecture.

- **The adjacency condition** (cf. Siegel (1977), Allen (1978)): affixation processes can be made sensitive to the content of an internal morpheme only if that morpheme is the one most recently attached by a morphological rule
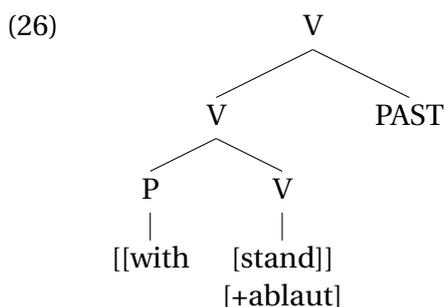
  – can be used to reanalyze the effects of level-ordering:

  (24)   V   → /stud/
            ╱   ╲
          V   PAST
          │
        stand
      [+ablaut]
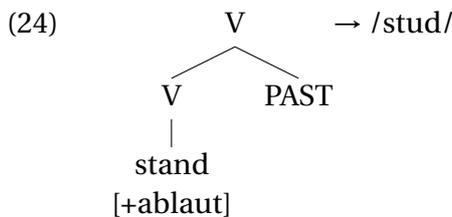
  – Ablaut rule fails to apply when PAST is not adjacent to the strong root:

  (25)   V   → /grandstanded/
                      ╱   ╲
                    V   PAST
                 ╱   ╲
               N   ∅
            ╱   ╲
          A   N
          │   ╱   ╲
        grand   V   ∅
                 │
               stand
             [+ablaut]

  – but what about *withstood*? No adjacency ...

  (26)   V
                ╱   ╲
              V   PAST
           ╱   ╲
         P   V
         │   │
       [[with   [stand]]
              [+ablaut]

5.2 Heads in morphology

- Williams (1981): the verb root is the head (*with* does not change the syntactic category), its features percolate to the dominating node → *withstand* is a strong verb like its head:

(27)
```
            V
         [+ablaut]
          /    \
         P      V
         |      |
       with   stand
            [+ablaut]
```

(28)
```
              V          → /withstud/
            /   \
           V     PAST
       [+ablaut]
        /    \
       P      V
       |      |
     with   stand
          [+ablaut]
```
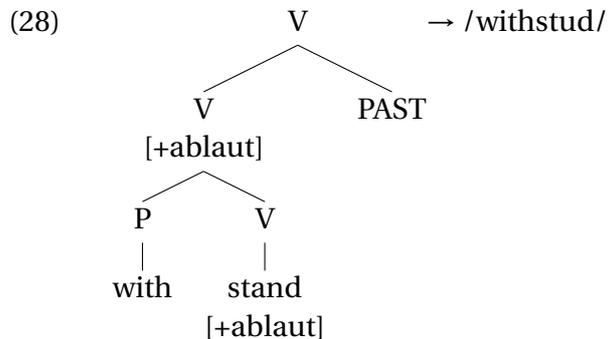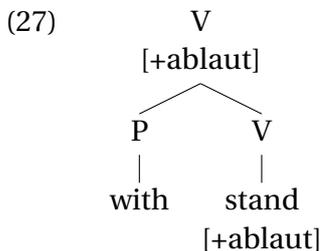
- Righthand Head Rule: all words are headed, and the head is the right-most morpheme of the construction → All suffixes are heads and no prefixes are heads; morphemes that can be heads must be assigned to a syntactic category

- affixes have a subcategorization frame

- compounds: the rightmost member determines the syntactic category (and the meaning):

(29) a. houseboat, blackbird, swearword
b. breastfeed, underplay ('sich zurückhalten')
c. dark blue, overripe

- Atom Condition (Williams (1981: 353)):
  A restriction on the attachment of af to Y can only refer to features realized on Y

- Problems for the Righthand Head Rule

  - prefixes can't be heads, but what about de-adjectival or de-nominal verbs?

    (30)   ennoble ('adeln'), decipher

  - all inflectional affixes are predicted to be heads, and as a consequence, there should be no languages in which inflections are prefixes

  - in syntax, the head can also be on the left (as in OV-languages);

  - words without semantic heads: exocentric compounds

    (31)   pickpocket, cutthroat, Rothaut, Angasthase, Rotznase

  - bracketing paradoxes require conflicting bracketings:

    (32)   ungrammaticality, transformational grammarian

- Further issues with constituent structure in morphology

  – headedness may be a more general property of grammatical structures (cf. vowels in phonology, syllable structure etc.) and therefore not necessarily indicative of similarities between morphology and syntax

  – it is unclear whether one finds the same projection levels in morphology as in syntax – but given the introduction of Bare Phrase Structure in Chomsky (1995), the lack of projection levels in morphology no longer constitutes an argument against the assimilation to syntax, cf. Borer (1998: 160ff.) for discussion

  – there do not seem to be specifiers in word structure – if an affix selects a stem, the stem should be the complement; but cf. Lieber (1992) for arguments for specifiers in morphology

  – the approach seems well-motivated for agglutinating languages, but much less so for other morphological types

5.3   Inflectional morphology in lexicalist syntax

- Lieber (1980), Selkirk (1982), DiSciullo and Edwin (1987): affix has a lexical entry which specifies its phonological form, its semantic content, its subcategorization restriction, and its morphosyntactic properties:

  (33)   a.   Phonology: /z/
         b.   Semantics: ∅
         c.   Subcategorization: $[_V \text{ V\_\_}]$
         d.   Morphosyntactic properties: PER:3; NUM:sg; TNS:prs; MOOD:indic

- complete lexical items are inserted into the syntax; the features of the morphological object are projected into the syntax, cf. Chomsky (1995) and undergo checking relations by moving via functional heads (which bear abstract syntactic features)

- Since not all morphosyntactic features are borne by the last suffix, it must be possible for the features of the other affixes to percolate to the top node of the word → the notion head needs to be relativized to certain features, cf. DiSciullo and Edwin (1987) (features can percolate from non-heads provided there is no marking for that feature elsewhere)

- general problems

  – what about non-concatenative means of exponence, e.g. ablaut, reduplication, discontinuous affixes, root and pattern morphology? It is not really clear how to deal with such phenomena if words are composed of morphemes → ablaut is sometimes reanalyzed by means of diacritics on the root + a regular zero past morpheme (the diacritic then triggers a late phonological rule)

  – what about extended/multiple (1 feature, several morphemes) and cumulative exponence (1 morpheme, several features)? In these cases, it is not clear which features are contributed by which morpheme → there is not always isomorphism between features and word structure

- issues for a checking approach
    - an inflected word's morphosyntactic properties are often underdetermined by its form, i.e. the morphological form is underspecified → one is forced to adopt zero affixation (Macedonian verb *padn-* 'fall' in the Aorist):

        1sg   padn-a-v
        2sg   padn-a
        3sg   padn-a
        1pl   padn-a-v-me
        2pl   padn-a-v-te
        3pl   padn-a-a
    - → if the feature content present on the verb in syntax solely stems from the morphemes (i.e. if the features project from the morphological object), the verb will often end up underspecified and it is unclear how checking is supposed to work in this case
    - → underspecification is less of a problem in frameworks like LFG or HPSG where agreement does not involve checking/copying but rather unification of features
    - effects of the mirror principle arguably have to be stipulated or alternatively, it is necessary that the internal structure of the word is reflected by a layered feature structure on top of the word to ensure checking in the correct order, cf. Ackema and Neeleman (2002: 115)
    - trigger for head-movement cannot be the affixal status of the morphemes (as in the syntactic approaches, cf. below), there has to be a syntactic trigger
    - it is unclear if this approach works for applicatives, causatives and noun-incorporation. Here, the verb would have to be generated togehter with the noun/preposition/causative affix and then this complex would have to move to another verbal head, cf. Borer (1998: 178ff.) for discussion
- the lexicalist approach has been very influential in non-derivational frameworks such as HPSG or LFG where much of what Chomskyan syntax handles syntactically is treated lexically (e.g. passive, raising, control)

6 Syntactic affixation

- since Baker (1988) there has been a shift towards syntactic analyses of morphological phenomena

- but with the exception of Lieber (1992), much of the research – at least up to the mid-90ies – has been concentrated on a rather narrow range of phenomena, mostly inflectional morphology and and valency-changing operations like applicative, causative or passive and nominalizations. Syntactic accounts of large parts of derivational morphology and especially compounding are still rather scarce

- much of the literature that claims to be syntactic thus implicitly subscribes to the Split-Morphology-Hypothesis in that - at least certain parts of - derivational morphology do not take place in syntax (even in Baker (1988))

- Distributed Morphology is more radical in that it explicitly denies the existence of a morphological component. All morphologically complex items have to be constructed in the syntax. But here too, not all kinds of word formation have attracted the same amount of attention, compounding, for instance, is hardly dealt with, cf. e.g. Harley (2009)
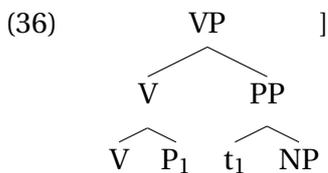
6.1 Baker: incorporation

- Proposal: valency-changing operations like noun-incorporation, causative, applicative and passive are handled in the syntax

- they involve incorporation = head-movement of N/P/V into the governing verb

- the trigger for movement is the affixal nature of these items, i.e. they need a host (the nodes are assumed to contain phonological material): applicative P and N are bound morphemes, as is the causative head which triggers incorporation into it

  (34) a. Seuan-ide ti-mũ-ban.
            man-SUF 1.SG-AOR-see-PST
            'I saw the/a man.'
        b. Ti-**seuan**-mũ-ban.
            1.SG.AOR-man-see-PST

  Southern Tiwa, cf. Baker (1988: 77)

  (35)
```
            VP
           /  \
         NP     V
         |     /  \
         N    V    N
         |    |    |
         t₁  see  man₁
```
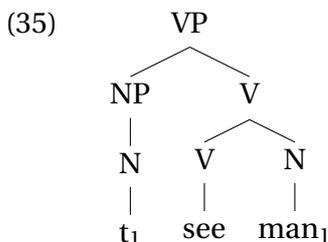
- applicative derivation:

  (36)
```
            VP          ]
           /  \
         V      PP
        / \    /  \
       V  P₁  t₁   NP
```

- arguments for a syntactic account

  - semantics are transparent under a movement account: The theme argument of the verb is always generated as the structural object → the identical thematic interpretation structures with and structures without incorporation follows (UTAH)

  - verbs with incorporated nouns are destransitivized, can no longer take a direct object

  - noun incorporation (and incorporation of verbs and prepositions as in causatives and applicatives) is restricted by syntactic locality constraints (ECP): only direct objects and unaccusative subjects can be incorporated but not unergative subjects → it seems that a lexicalist approach has to stipulate these properties while in the syntactic approach, the restrictions are a reflection of independently motivated principles

  - The Mirror Principle: morphological structure reflects the syntactic derivation:

    (37) a. Mbidzi zi-na-perek-a   mpiringidzo kwa mtsikana.
              zebras AGR-PST-hand-ASP crowbar   to girl
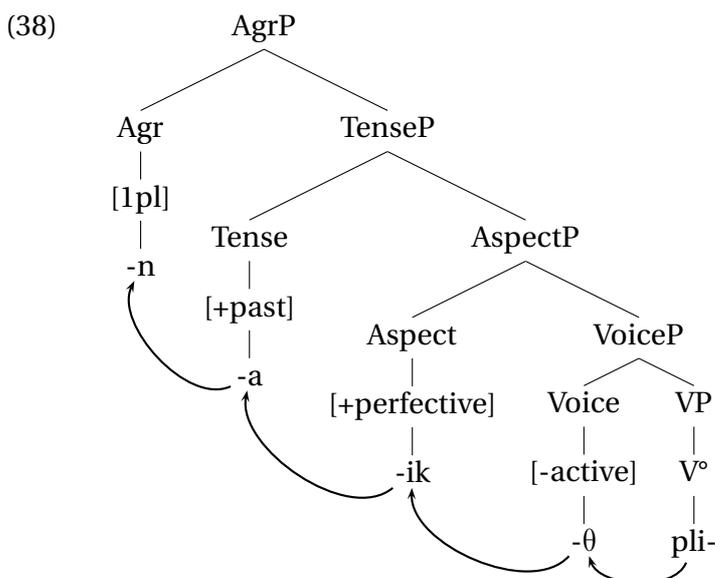   'The zebras handed the crowbar to the girl.'

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    b.   Mbidzi zi-na-perk-**er**-a   mtsikana mpiringidzo.
          zebras AGR-PST-hand-APPL-ASP girl   crowbar
          'The zebras handed the girl the crowbar.'

    c.   Mpiringidzo u-na-perk-**edw**-a   kwa mtsikana ndi mbidzi.
          crowbar   AGR-PST-hand-PASS-ASP to   girl   by zebras
          'The crowbar was handed to the girl by the zebras.'

    d.   Mtsikana a-na-perek-**er-edw**-a   mpiringidzu ndi mbidzi.
          girl   AGR-PST-hand-APPL-PASS-ASP crowbar   by zebras
          'The girl was handed the crowbar by the zebras.'   *Chichewa*, cf. Baker
          (1988: 14)

- problematic issues

  - incorporation can also involve adjuncts, and sometimes, there is doubling, i.e. there is an object in addition, cf. Spencer (2000: 315, 323)

  - incorporation predicts stranding to be possible, but it appears to be highly restricted (apparent stranding in incorporation occurs independent of incorporation)

  - it is unclear why incorporated elements (e.g. incorporated verbs in nominalizations) do not have any licensing capabilities, e.g. accusative case or adverbials (in which case it is not obvious how one can say that the licensing potential gets lost after incorporation)

  - there are also cases of incorporated subjects, cf. Ackema and Neeleman (2007: 341)

6.2 The Mirror Principle extended to inflectional morphology

- The Mirror Principle proposed in Baker (1988) was later related to work on functional projections above VP (AgrP and TenseP) like Pollock (1989):

- each affix is located in a different functional head, and inflected words are derived by successive head-movement, cf. e.g. Modern Greek *plí-θ-ik-an* 'they washed themselves':

(38)
```
                    AgrP
                   /    \
                Agr      TenseP
                 |      /      \
               [1pl]  Tense     AspectP
                 |      |       /      \
                -n   [+past]  Aspect    VoiceP
                 ↑      |       |      /     \
                 |     -a   [+perfective] Voice   VP
                 |      ↑       |        |       |
                 |      |      -ik   [-active]   V°
                 |      |       ↑        |       |
                 |      |       |       -θ      pli-
                 |      |       |        ↑       |
                 |      |       |_____|       |
                 |      |_____|
                 |_____
```

- the nodes contain phonological material

- the affixhood of the inflectional morphemes is taken to be the trigger for verb movement

- similar problems as for the lexicalist approach arise:

  - what about non-concatenative means of exponence, e.g. ablaut, reduplication, discontinuous affixes, root and pattern morphology?

  - what about extended/multiple (1 feature, several morphemes) and cumulative exponence (1 morpheme, several features)?

  - If the features can only originate from the morphemes, what if a morpheme is underspecified? Suppose a noun is underspecified – how can it check phi-features on v/T?

- further problems

  - head-movement normally only derives suffixes → one needs other means such as variable direction of adjunction to get prefixes

  - works well in case the affix order neatly corresponds to an independently established order of functional heads (mirror principle), but becomes problematic if languages differ in the order of morphemes (e.g. root-tense-agr vs. root-agr-tense), without there being independent reasons to postulate a different order of functional heads

  → danger of circularity: functional heads are ordered because of the order of affixes, and the affixes then happen to reflect the order of functional heads → as a side-effect, the the extension of the Mirror Principle to inflectional morphology has lead to a proliferation of functional heads in syntax

- see Julien (2002), Julien (2007) for a syntactic approach that derives word-like properties with a variety of means (head-movement, phrasal roll-up movement); she shows that the impression of wordhood can also obtain if inflectional morphemes are simply adjacent to other morphemes without there being complex head-formation (e.g. if for independent reasons the specifier between two heads is always empty)

7 Realizational approaches

- The typology of theories of inflection in Stump (2001: 2f.):

  1. Incremental Theories:
     Inflection markers add morpho-syntactic features that would otherwise not be present on a word form: the suffix -s adds the features 3sg, pres, indic to a stem *like*

  2. Realizational Theories:
     inflection markers do not add morpho-syntactic features; all pieces of morpho-syntactic information are independently available: e.g. a root *like* is associated with the features 3sg, pres, indic, and this licenses the attachment of the suffix -s

  3. Lexical Theories:
     Inflection markers are associated with (possibly abstract) morphemes that exist independently, as separate objects in the lexicon (pre- or post-syntactic) that are specified for certain features

  4. Inferential Theories:
     Inflection markers do not have morpheme status and do not exist independently, as separate objects; the relations between the root and the inflected forms are established by means of rules

- Theories that result from cross-classification

  (39)   a.   lexical-incremental:
              Lieber (1992), Dieter (1996) (Minimalist Morphology)
         b.   lexical-realizational:
              Halle and Marantz (1993) (Distributed Morphology)
         c.   inferential-incremental:
              rare
         d.   inferential-realizational:
              Anderson (1992), Stump (2001) (Word and Paradigm approaches)

- the major advantage of realizational theories

  - do not presuppose isomorphism between syntactic features and morphological form
    as e.g. in the lexicalist and word syntax approaches above (which are both incremental
    and lexical)

7.1   Word and paradigm Morphology/Paradigm Function Morphology

- Anderson (1992), Stump (2001): morphological rules realize syntactic feature content

- rules can introduce affixal or non-concatenative markings, e.g.
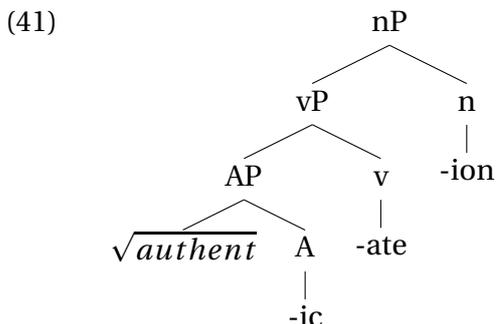
  (40)   V
         $\begin{bmatrix} \text{PER: 3} \\ \text{NUM: sg} \\ \text{TNS: pres} \\ \text{MOOD: indic} \\ \text{/X/} \end{bmatrix} \rightarrow \text{/X-z/}$

- compatible with non-concatenative morphology

- compatible with cumulative/multiple exponence

- effects of the mirror principle arguably have to be stipulated

7.2   Distributed Morphology

- Halle and Marantz (1993), for an introductory overview cf. Embick and Noyer (2007), Siddiqi
  (2010)

- post-syntactic

- realizational: syntax only manipulates roots and features (= abstract morphemes), insertion
  of phonological exponents (= vocabulary insertion) takes place in the Morphology, i.e. after
  spell-out (= late-insertion)

- complex morphological objects can be derived via head-movement in syntax, which derives
  the effects of the Mirror Principle (cf. Baker (1988) and above) or via Merger at PF (cf. affix-
  hopping)

- both inflectional and derivational morphology is handled in the syntax, cf. e.g. *authentication* (syntax all the way down):

(41)

```
                        nP
                       /  \
                     vP     n
                    /  \    |
                  AP    v  -ion
                 /  \   |
          √authent  A  -ate
                    |
                   -ic
```

- vocabulary items can be (and usually are) underspecified; the Subset principle controls the competition of markers in case more than one marker fits the feature content of a syntactic node → the most specific item is inserted; the insertion rules can contain contextual specification, e.g. a given morpheme only for certain roots as in irregular inflection (e.g. *-en* only for *ox*) or latinate suffixes, or only for certain syntactic categories

- in the default case, the morphological structure matches the syntactic, but there are also deviations, which are the result of (language-particular) PF-operations

  - insertion of nodes/features (dissociated features/nodes): agreement nodes (which are not part of syntax), theme nodes (thematic vowels) and case features/nodes (in some of these approaches, agreement features are copied at PF, but not everyone subscribes to this!)

  - operations on nodes: impoverishment, fusion and fission

    - impoverishment: allows for the expression of syncretisms that do not seem to constitute a natural class (i.e. cannot be handled by means of underspecification)
    - Fusion: combines two abstract morphemes into a single terminal node; this is e.g. necessary for fusional morphology/cumulative exponence (e.g. case and number)
    - Fission (in Halle and Marantz (1993): separates a feature bundle on a terminal node such that two terminal nodes arise, e.g. for multiple exponence
    - Fission (in Noyer (1997)): slightly more complex version
    - enrichment

  - readjustment rules are needed to capture stem-allomorphy and non-concatenative morphology more generally (e.g. vowel-changing rules)

  - late rules like Local Dislocation may reorder affixes

  - phonologically conditioned allomorphy happens in the Phonology (and thus after Morphology)

- trigger for head-movement is purely syntactic

- it is unclear how this approach can capture syntactic effects of "rich morphology", e.g. pro-drop or V-to-I-movement

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