Morph telco 2022-07-13, 13:00 CET

**Link:** [**https://meet.google.com/nsj-tbcy-yop**](https://meet.google.com/nsj-tbcy-yop) **[check here for link updates if it doesn’t work]**

**Latest Definitions:**  <https://github.com/ontolex/morph/blob/master/draft.md>

**Latest Paper (LDL-2022):** <https://www.overleaf.com/4868363189kczjzdndgxwc> (folder submission/)

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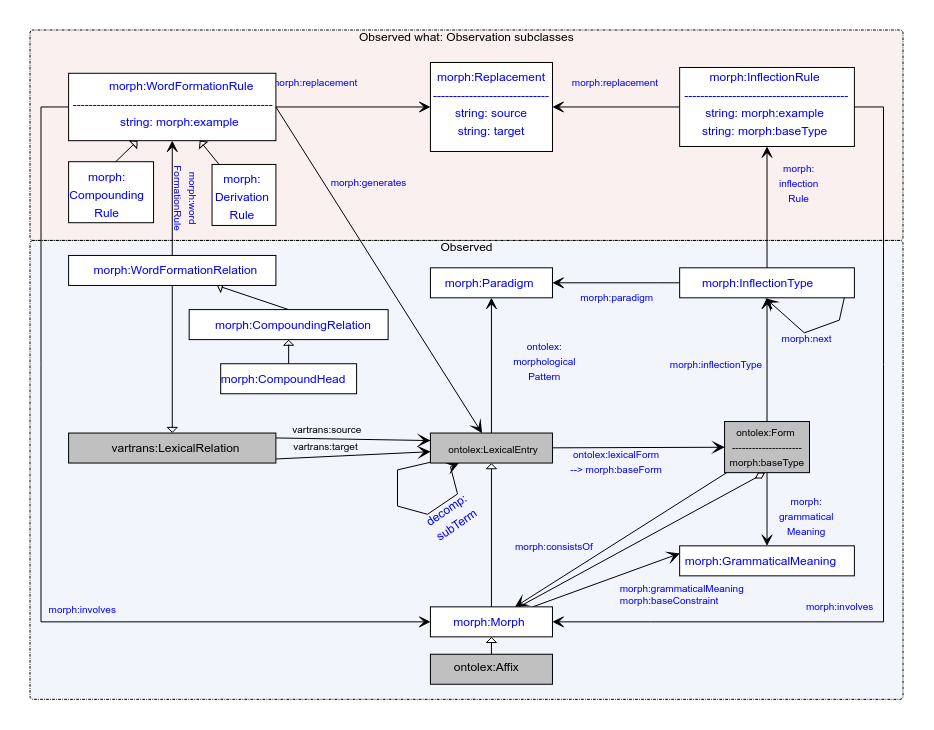
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# 

# 0. Module draft

**draft 4.15 (no updates)**



**Model draft 4.16 updates (to be discussed) & open issues:**

* inflection type to be discussed
* overall, it seems people have least issues with alternative 1
  + CC: alternative 1 or 2 for agg. languages (0 and 3 => combinatorial explosion)
  + MP: alternative 1 (or 3) (0 fails, 2 has terminological issues)
  + KG: need link with GrammaticalMeaning
  + on-going discussion: rename GrammaticalMeaning (esp., if used for slots or finite states)?
* after telco:
  + CC: alternative 1 with KG-requested additions suggested as 4.16 (not confirmed)
    - <https://github.com/ontolex/morph/tree/master/doc/diagrams>
    - InflectionType: alternative 1
    - grammaticalMeaning: linked with inflection rule and inflection type (with question marks, link with inflection type requested by Penny&Katerina)
    - Rule resurrected (only to simplify diagram: holds properties replacement, involves and examples, inherited by inflection rule and word formation rule)

# 1. Publications

* LREC wrapup
  + several morphology-related papers
    - GlobaLex
      * summary later, synopsis of two databases for German (GermaNet + CELEX), LOD edition, sequence modelling
      * discussion of German resources, incl. SMOR, Morphisto in September
    - LDL: KG, presented current draft, 3 use cases (LiLa, LEXIS, FST@German), slides skipped FST
      * questions: about inflection, just on similar use cases
      * mostly focusing on inflection rule, not inflection type
    - LREC
      * poster on use cases for data generation, GermaNet, Unimorph, Unider, Morphisto
      * no particular feedback, but interest in model
      * also to be discussed in Sep
        + TODO: invite Thierry Declerck, MMorph modelling, also including German
* LLODREAM <https://easychair.org/cfp/llodream2022>
  + Conference site : <http://llodapproaches2022.mruni.eu/>
  + accepted (abstract), final paper for postproceedings only
    - <https://docs.google.com/document/d/1a7OWCgcD6qDYPta0shiIh6CzWTw7E1ptnwQKXVA4xDo/edit>
    - main feedback: abstract doesn’t show use cases
    - presentation: duration tbd.
    - conference: Sep. 20,21 (tbc) => discuss at next meeting
    - Full paper submission by **December 1st, 2022**
* MWE volume
  + multi-word expressions, see FrAC minutes (<https://docs.google.com/document/d/1N2w_r6WLhFGESSMSUkG5FSROorXscDMQuB77qg9uDIA/edit#heading=h.i84zrrbp06oy>)
  + deadline January (full paper)
  + expression of interest and short abstract handed in:
    - describe and compare modelling of MWEs in OntoLex core, decomp, FrAC, \*and morph\* (~compounding)
    - primarily designed as a FrAC paper, but input from morph contributors would be welcome (LiLa?)
      * Matteo&Elena: in principle interested, will look into that
    - cf. open issues from earlier minutes
      * describe the relation between decomp and CompoundRelation
        + **suggestion**: do this as part of writing a designated paper [venue?]
        + **TODO**@unassigned: document relation between both modules in appendix

there is an alternative reification with decomp:Component, but this is less well-suited for compound analysis, because it doesn’t relate to lexicosemantic relations.

the current modelling of decomp is oriented towards an analysis of synsem (semantic) roles within a compound. in morphology, we normally don’t have that, what we have, instead, are relations between lexemes and morphemes.

* future publications
  + any “natural choices” for a venue?
    - Petra: Derimo-2023 Workshop, Prague
      * deadlines to be confirmed
  + ideas
    - paper on word formation?
      * idea for novel paper: word formation in OntoLex-Lemon
        + not original content, but more like a survey and documentation of best practices?
        + can be helpful to consolidate/revise word formation part of the module
        + possible input from LiLa
        + **TODO@all:** think about possible venues
    - general OntoLex overview
      * ?ESWC: Deadline?
        + ESWC: 2 Dec 2021 for ESWC2022 -> there are no dates for the ESWC2023 CFP as the ESWC2022 is between 29th May and 2nd June
      * update of OntoLex, incl. FrAC, Morph, MModality
  + later journal paper
    - After the final publication
    - Or: an overview of the current state. Frac + Morph or Frac separately, Morph separately?
    - (at some point) a book?

# 2. definition consolidation

* **standing TODO@all**: provide/refine/review definitions
  + under <https://github.com/ontolex/morph/blob/master/draft.md>
  + technical definitions, but linguistic explanation (“definition”) in text
  + **@all**: you can contribute suggestions by creating issues (<https://github.com/ontolex/morph/issues>), via pull requests, or by direct editing (share your GitHub username)
  + procedure: for definition refinement:
    - open an issue
    - pull request + close the issue
* status:
  + pull requests by Matteo and Penny *merged*
  + draft contains now a number of notes
  + **more consolidation needed**
  + **todo:** revise/confirm morpheme typology in lexinfo (suggested by Sina)

## 2.2 overview

* continue model overview for Elena B., Sina and Petra: Inflection part
  + Max: morphs are not morphemes, but can also be extrapolated from fullform dictionary (~allomorphs)
  + Petra: this is like Harris-Firth approach? Distributionalism?
  + CC: definitions are technical (= self-contained), not linguistic. we try to avoid commitments to any specific theory, concepts should still be intuitively comprehensible by linguists
  + Max Ionov: In this specific use case, almost. But we try to stay approach-independent. We just want to provide means to model \_any\_ data
  + CC: two main scenarios
    - model an existing morpheme inventory or rule set (e.g., for generation, then, morphs are not automatically created)
    - induce morphs/rules and store them (and then use them as in the first scenario for morphological generation)
  + inflection type may be need to be revised

## 2.3 replacement (wrapup)

conventions for replacement correspond to those of pattern matching/replacement in SPARQL, as formally defined

* in SPARQL 1.1 (<https://www.w3.org/TR/sparql11-query/>), which points to
  + the XPath function replace (<https://www.w3.org/TR/xpath-functions/#func-replace>), and
  + the XPath regex syntax (<https://www.w3.org/TR/xpath-functions/#regex-syntax>)

A more readable, informal description under

* <https://en.wikibooks.org/wiki/SPARQL/Expressions_and_Functions#REGEX>

Note that in the formal syntax definition, “\” is used to mark special characters. However, as most SPARQL engines are Java-based and Java uses “\” as an internal escape symbol, you actually have to write “\\” instead of “\” as defined in the syntax. A literal single “\”-character in a regex must thus be double escaped (i.e., “\\\\”).

Note: This syntax originates from regular expressions in Perl (<https://perldoc.perl.org/perlre>).

Except for minor differences in escaping and special characters, this is equivalent to

* the syntax of regular expressions in Java (<https://www.w3schools.com/java/java_regex.asp>)
* the syntax of regular expressions in Sed (<https://www.gnu.org/software/sed/manual/html_node/Regular-Expressions.html>) (and other Unix command-line tools, e.g., grep)

## 2.4 InflectionType

* current definitions:
  + Class **morph:InflectionType** represents a single slot for a single grammatical category for all its possible values (e.g. all the cases)
    - Book analogy: a column from a paradigm table without allomorphy/alternative variants for just a single morpheme
  + property **morph:inflectionType** assigns an inflectional pattern of a form as belonging to a morphological pattern of a lexical entry
* CC (offline): this definition *does not work* for the current diagram, if one inflection type represents the position for \*all\* cases, we cannot associate the form for, say, dative with the rule for dative via inflection type (thanks to Matteo for pointing that out).
  + <https://github.com/ontolex/morph/issues/11>
* Comparing alternatives:

### current model

* + - 1. Form -inflectionType-> InflectionType
      2. Paradigm <-paradigm- InflectionType
      3. InflectionType -inflectionRule-> InflectionRule
      4. InflectionType -next-> InflectionType
    - alternative 0: keep current model, one inflection type per paradigm and rule

**pro**: backward-compatible

**con**: unneccessarily verbose: what is the difference to inflection rule then?

**con**: still contradicts current definition

### alternative 1: detach InflectionType

* + - 1. Form -inflectionRule-> InflectionRule
      2. Paradigm <-paradigm- InflectionRule
      3. InflectionRule -inflectionType-> InflectionType
      4. InflectionType -next-> InflectionType

**pro:** we basically keep all the information we have, incl. finite state modelling and agglutination

**con:** inflection type won’t be used for fusional languages and probably fall out of use

**con:** terminologically, the finite state use case is still a bit of a stretch, a better name?

**note**: paradigms should be allomorphy-free, then (this is at odds with traditional usage of “paradigm”. in inflection tables, it normally includes allomorphic variants.

### alternative 2: replace InflectionType by GrammaticalMeaning

* 1. Form -inflectionRule-> InflectionRule
  2. Paradigm <-paradigm- InflectionRule
  3. InflectionRule -grammaticalMeaning-> GrammaticalMeaning
  4. GrammaticalMeaning -next-> GrammaticalMeaning

**pro**: we basically keep all the information we have, incl. finite state modelling and agglutination

**pro:** we eliminate one class and we address a feature request by Penny

**pro:** slot information *can* be plausibly a part of grammatical meaning (or, better, structure)

**con**: no explicit data structures for slots, researchers would need to “discover” that from comments => rename next to nextSlot?

**con**: for FST, this is very opaque, a better name? => we could introduce a designated subclass “FiniteState” of GrammaticalMeaning !?

### alternative 3: merge InflectionType with InflectionRule

* 1. Form -inflectionRule-> InflectionRule
  2. Paradigm <-paradigm- InflectionRule
  3. InflectionRule -grammaticalMeaning-> GrammaticalMeaning
  4. InflectionRule -next-> InflectionRule

**pro**: we keep all the information we have, incl. finite state modelling and agglutination

**pro**: we eliminate one class and address a feature request

**pro**: “rule” is more relatable to what a finite state does than “inflection type” (which sounds static)

**con**: no explicit data structures for slots, researchers would need to “discover” that from comments

**con**: in agglutinating languages, the sequence is not over replacement rules, but classes of morphemes, so we lack a formal data structure for slots

**con**: for FST, this conflates states and replacements, normally one state can have different replacements (“rules”)

Penny+Katerina (summary of last call, tests for fusional language):

* all alternatives express the neccessary information (if a direct link with grammatical meaning is added)
* prefer alternative 2
  + alternatives 1 and 3 are equivalent if a direct link with grammatical meaning is added
  + alternatives 1-3 preferred over current model in terms of verbosity
* CC: that corresponds to my personal preference, too
* CC: minor refinements (to be discussed after applicability to agglutinative language has been shown)
* rename GrammaticalMeaning to “Features” (or “FeatureBundle”; a “slot” is described as a bundle of features, so that makes sense, and finite states are informally associated with some kind of function, but typically not a specific grammatical meaning, esp. for morphophonological processes)
* introduce a subclass FiniteState of FeatureBundle (we would informally capture the finite state itself as a feature, and the bundle would consist of exactly one such feature)

confirm on agglutinative languages

* sample data (Turkish) from Christian on GitHub under data/agglutinating/turkish.md
  + to be discussed in detail next time
  + preference (in terms of verbosity) for alternatives 1 or 2
  + alternatives 0 and 3 lead to combinatoric explosion
* Matteo:
  + strong preference against alternative 0
  + others are unproblematic
  + not happy with slots as “grammatical meaning”, could mismatch
    - Christian: we can rename, see remarks from last time
  + preference to alternative 1 (or 3)
* after discussion:
  + CC: possible workaround would be to create a class FeatureBundle with sub-classes GrammaticalMeaning, Slot and FiniteState
    - “inflection type” caused a lot of misunderstandings, so maybe use “Slot” instead, and really only for slots.
    - “next” formally defined for Feature bundle, but is relevant for Slot and FiniteState only
    - property “grammaticalMeaning” needs to be renamed then, too, maybe “morph:feats”, subproperties grammaticalMeaning (range is GrammaticalMeaning) and inflectionType (range is Slot)

## 2.5 related standards

* Matteo: paralex standard for morphological lexicons (currently under development by Sacha Beniamine and Erich Round)
  + to be discussed ASAP

# 3 open problems/other data [postponed]

## 3.0 extend documentation / draft

* **OPEN**: define cardinality restrictions: <https://github.com/ontolex/morph/issues/12>
  + suggestion: when finalizing the vocabulary
* **CHECK STATUS**: define morph subclasses in LexInfo rather than OntoLex-Morph, also add equivalence axioms (lexinfo:Prefix subclassOf [ lexinfo:termElement lexinfo:prefix ])
  + <https://github.com/ontolex/lexinfo/pull/29>
  + not merged yet
* describe grouping of lexical (sub-) entries
  + LiLa: “flexeme”, sub-entries with different paradigms, but identical in meaning, etc.
    - suggestion: model the grouping by lexicog, have both the overarching lexical entry and the flexemes as separate lexical entries, no vocabulary extension needed, but a usage note in the report
    - **tbc:** by LiLa
  + Penny: sub-entries of the same lexical entry to mark contracted and non-contracted versions of the same paradigm
    - can be partially modelled by means of “markers”, i.e., lexinfo usage properties, instead
    - **todo@Penny**: tbc. whether lexinfo needs to be extended for that
      * domain: LexicalSense
      * **TODO**: ask John
      * if these properties are added, no sub-groups necessary
* @all: think about metadata properties for LexInfo (hypothetical/unattested form, etc.) => tentative consensus, but details to be discussed
  + Penny: could work, but domain is ontolex:LexicalSense. Can this be changed?
  + **TODO**: ask John
* Sample data for cliticization
  + **OLD\_TODO@Sina**: provide sample data, maybe we can come up with a recommendation
  + cf. Italian: <https://en.wiktionary.org/wiki/andiamoci>, <https://en.wiktionary.org/wiki/andarsene>
* Sample data for reduplication?
  + mentioned by Sina last time
  + tentative consensus: no special vocabulary needed, but should be confirmed on sample data

## 3.1 Comparison with MMoOn (Mod. Greek, Hebrew, other; unassigned)

* Greek : <https://link.springer.com/chapter/10.1007/978-3-030-98876-0_34>
* Bettina’s data (link?)
* not directly comparable, current Gk. data is inflectional

## 3.2 baseConstraint + grammatical Meaning + baseType

* Christian: sample data from Inuktitut (GDrive) (<https://github.com/ontolex/morph/raw/master/data/gdrive/Polysynthetic_Inuktitut.docx>)

atausiulugu

{atausi:atausiq/1n}{u:u/1nv}{lugu:lugu/tv-part-1s-3s-fut}

{one}{existence; is}{part. future: while I ...him/her/it}

:atausiq\_le a ontolex:LexicalEntry;

ontolex:sense [ skos:definition “one” ];

ontolex:canonicalForm [ a ontolex:Form; ontolex:writtenRep “atausiq” ];

ontolex:baseForm [ a ontolex:Form; ontolex:writtenRep “atausi”; morph:grammaticalMeaning “n” ].

:u\_morph a ontolex:Affix, lexinfo:Suffix;

ontolex:sense [ skos:definition “existence; is” ];

ontolex:canonicalForm [ ontolex:writtenRep “u” ];

morph:baseConstraint [ :pos “n” ]; # from “1nv”

morph:grammaticalMeaning [ :pos “v” ]. # from “1nv” : convert noun into verb

# note: this generates a stem, not a word, it only becomes a proper word with inflection:

:lugu\_morph a ontolex:Affix, lexinfo:Suffix;

ontolex:sense [ skos:definition “while …” ];

ontolex:canonicalForm [ ontolex:writtenRep “lugu” ];

morph:baseConstraint [ :pos “v” ]; # from “tv-”

morph:grammaticalMeaning [ :pos “v-part-1s-3s-fut” ].

:atausiu\_le a lexinfo:Stem, ontolex:LexicalEntry;

ontolex:sense [ skos:definition “so. will be sth.” ];

ontolex:baseForm [ ontolex:writtenRep “atausiu” ];

# this is not a free-standing lexeme, and there is no canonical form that is a word

ontolex:lexicalForm [ ontolex:writtenRep “atausiulugu” ;

rdf:\_1 :atausiq\_le;

rdf:\_2 :u\_morph;

rdf:\_3 :lugu\_morph ].

this is purely descriptive, no explicit rules written, but baseConstraint and grammaticalMeaning allow to check consistency conditions.

Note that Inuktitut inflection involves some level of assimilitation, this is modelled here by means of baseForm (dropping of -q), but the contexts are not marked explicitly.

We could easily model that if morph:baseType is in morph:GrammaticalMeaning rather than in ontolex:Form. That would be necessary if a particular base form is only generated by a morpheme rather than given for a root/stem.

## 3.3 Samples to be modelled (all)

* most sample data originally on GDrive (where is the link?)
  + now (also) on GitHub: <https://github.com/ontolex/morph/tree/master/data/gdrive>
    - CC: can we fully move there?
* samples @ GitHub
  + Latin (word formation<LiLa: tbc: is that covered?)
  + Sumerian (agglutination<CC: open requirement: slots)
  + Old High German (word formation<CC: open requirement: tree structures)
  + Italian (word formation<Stefania; tbc: is that covered?)
  + Italian (inflection<WHOM?; tbc: is that covered?)
  + Inuktitut (incorporation, polypersonal agreement, assimilation/allomorphy; generation/parsing<CC: open requirement
  + UniMorph (inflection<CC: todo: apply modelling), cf. <https://github.com/acoli-repo/acoli-morph/tree/main/unimorph>
  + Finnish (generation<Max: todo: to be updated): <https://github.com/ontolex/morph/blob/master/data/generation/dataset-generation-example.ttl>
  + ?FST (FOMA, Quechua): <https://github.com/ontolex/morph/tree/master/data/foma/quechua>
* external:
  + LEXIS (Greek Parole-Simple dict@Penny)
  + DeriNet/UDer/Universal Derivations
    - Latin@LiLa ?
    - German@Christian: <https://github.com/acoli-repo/acoli-morph> (UDer 0.5 only)
  + SFST: <https://github.com/acoli-repo/acoli-morph> (Morphisto@Christian, German; inflection only)
  + GermaNet compounds: <https://github.com/acoli-repo/acoli-morph> (German@Christian)
  + Morph@Thierry (= Italian samples?)
  + **TODO**: (please list your data, unless described in separate section)
  + **Open requirements**: IGT/ToolBox/FLeX data, inflection tables!

## 3.4 inflection tables (Fahad, others?)

* Latin (?)
* Old English (Fahad): sample data: coman/quoman example, cf. <https://en.wiktionary.org/wiki/cuman#Old_English>
  + issues with dialects (reference dialect vs. other dialects) and diachrony (phonological processes); treatment of syncopation, suppletion, fusion of different roots [=> variants?] ?
* postponed until Fahad has some progress on modelling

## 3.5 semitic consonantal roots (unassigned)

* + from the same consonant cluster, we can generate different POSes
  + cf. <https://en.wikipedia.org/wiki/K-T-B>, <https://en.wiktionary.org/wiki/%D9%83_%D8%AA_%D8%A8>)
    - this cannot (always) be modelled as inflection, as OntoLex requires (at most) one POS per lexical entry
    - note that this page describes vowelized words as “derivatives”: can we model this as derivation ? (but the process occurs in inflection, too)
      * given a real dictionary, can be easily distinguish derivation and inflection?
  + cf. Arabic example from <https://en.wikipedia.org/wiki/Dictionary_of_Modern_Written_Arabic> (from Max)
    - dictionary organized by roots, but root is not made explicit
    - **todo@unassigned**: put an example into GitHub
* discussion postponed until we have a Semitic speaker
  + - Ilan?
      * but first, check Bettina’s conversion of KDictionaries’ Hebrew dict

# 3. AOB

next call in two weeks?

Sep 7, otherwise biweekly

TODO@CC: dig out stefania’s data on clitics to Sina

TODO@KG: move sample data form minutes into github/data