Yerevan, October 9th

# XIII UNL School

## Day #3

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- ~~Nlization (UGO)~~
- ~~UNLization (CORNELIA)~~
- Grammar: Morphology
  - Inflectional Paradigms
  - Subcategorization Frames

# Morphology

# Morphology

**ESSENCE**

- ABSTRACTNESS
- ALIENABILITY
- ANIMACY
- CARDINALITY
- GENDER*
- LEXICAL CATEGORY
- PART OF SPEECH
- REGISTER
- SOLIDARITY
- STATUS
- TRANSITIVITY
- VALENCY

**ACCIDENT**

- ASPECT
- CASE
- DEFINETENESS
- DEGREE
- GENDER*
- MOOD
- NUMBER
- PERSON
- POLARITY
- TENSE
- VOICE

# Accidents

**INFLECTION**
(ROOT + AFFIX = same UW)

- book > books
- write > wrote

**DERIVATION**
(ROOT + AFFIX = new UW)

- glory > glorify
- write > writer

**COMPOSITION**
(ROOT + ROOT = one UW)

- write > will write, write down

# Inflections

- Inflectional categories
  - NUMBER: NUM={SNG|PLR|DUA|…}
  - GENDER: GEN={MCL|FEM|COM|NEU|INV}
  - CASE: CAS={NOM|ACC|DAT|…}
  - ABSOLUTE TENSE: ATE={PRS|PAS|FUT|…}
  - RELATIVE TENSE: RTE={RPT|RPS|RFT|…}
  - ASPECT: ASP={PFV|NPFV|CAU|…}
  - MOOD: MOO={IND|IMP|SUB|…}
  - VOICE: VOI={ACV|PSV|MIV}
  - PERSON: PER={1PS|2PS|…}

# Derivations

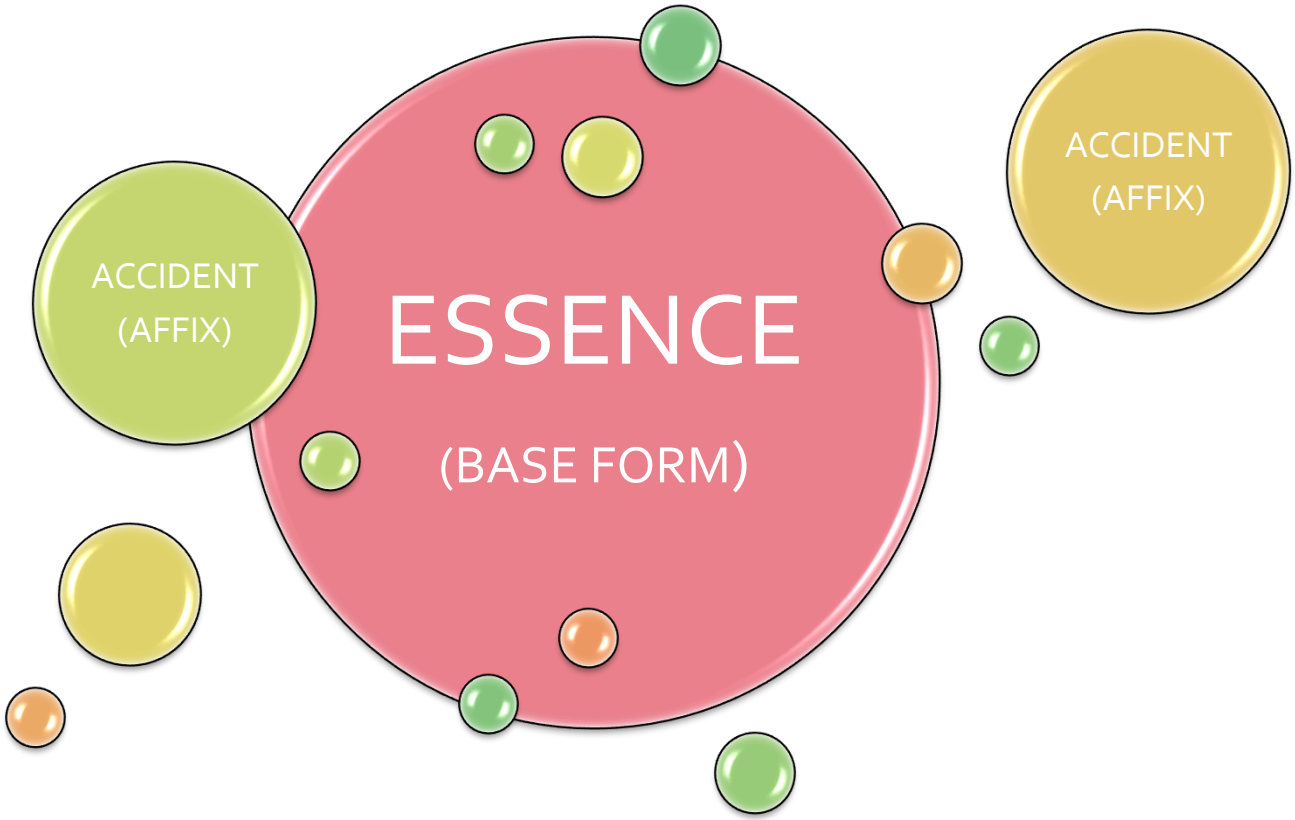
- Derivational categories
  - DEFINITENESS: DFN={DEF|NDEF|GNR|…}
  - DEGREE: DEG={AUG|CMP|DIM|…}
  - POLARITY: POL={AFM|NEG}

# Important!

- Be careful about prescriptive biases:
  - Irregular inflections are inflections
    - mouse > mice (inflection): mouse.@pl
    - actor > actress (inflection): actor.@female
- Open issues
  - undo = undo x do.@not
  - redo = redo x do.@again
  - cow = cow x bull.@female

# Accidents

# Accidents



# Affixation (A-rules)

- Prefixation
  - ACCIDENT<ESSENCE;
    - NOT:="un"<o;
      - do>undo
- Suffixation
  - ESSENCE>ACCIDENT;
    - PLR:=o>"s";
      - book>books
- Infixation
  - [ESSENCE]:ACCIDENT;
  - ACCIDENT<[ESSENCE];
  - [ESSENCE]>ACCIDENT;
- Replacement
  - ESSENCE:ACCIDENT;

# Inflections

# Inflections

**INFLECTIONAL PARADIGMS**

- AFFIXATION (PREFIXATION, SUFFIXATION, INFIXATION) TO THE BASE FORM
- REGULAR OR SEMI-REGULAR
- GRAMMAR
- book>books

**INFLECTIONAL RULES**

- AFFIXATION (PREFIXATION, SUFFIXATION, INFIXATION) TO THE BASE FORM
- IRREGULAR
- DICTIONARY
- mouse>mice

# Inflectional Paradigms

# Inflectional Paradigms

- Only inflectional categories
  - NUM, GEN, CAS, …
  - ~~DEG, DEF, POL, …~~
- Only affixation
  - kill>kills, killed, killing
  - ~~kill>will kill, is killing, have killed, …~~
- Only regular
  - book>books, bus>buses, …
  - ~~mouse>mice, child>children, …~~

# Inflectional paradigms

- M0 = INVARIANT (no change)
  - species, clothes, New York, …
- M1 = IRREGULAR (irregular changes, to be provided in the dictionary, through inflectional rules)
  - mouse, child, …
- M2-… to be provided in the grammar (they will be available in the dictionary, through a drop-down menu)
  - book>books
  - church>churches
  - baby>babies
  - …

# How to create an inflectional paradigm

1. Define the inflectional categories for the part of speech
   - Observation: the same POS may involve different inflectional schemes
   - English
     - book: book (SNG), books (PLR)
     - actor: actor (MCL&SNG), actors (MCL&PLR), actress (FEM&SNG), actresses (FEM&PLR)
2. Write the A-rules for each case
   - English
     - M2:
       - SNG:=0>""; (book>book)
       - PLR:=0>"s"; (book>books)
     - M127:
       - MCL&SNG:=0>""; (actor>actor)
       - MCL&PLR:=0>"s"; (actor>actors)
       - FEM&SNG:=2>"ress"; (actor>actress)
       - FEM&PLR:=2>"resses"; (actor>actresses)
3. Test the paradigm

# Important!

- You can only use the tagset
  - masculine = MCL
- Attributes are conjoined through &
  - MCL&SNG
- The order of attributes is not important
  - MCL&SNG = SNG&MCL
- Rules are not cumulative
  - FEM:=2>"es";  (actor>actress)
  - PLR:=0>"es"; (actor>actores)
- Rules must be mutually exclusive
  - ~~PLR:=0>"s"; (actor>actors)~~
  - ~~FEM&PLR:=0>"es"; (actor>actors>actorses)~~
- In case of alternative forms, use ALT
  - PLR:=0>""; (fish>fish)
  - PLR&ALT:=0>"es"; (fish>fishes)

# Activity #3

# Activity #3.1

- Create, in the UNLsandbox, the paradigms necessary to generate the inflections of the following nouns:
  - English: thief (thief, thieves)
  - English: prince (prince, princes, princess, princesses)
  - Latin: rosa (below)

| CASE | SINGULAR | PLURAL |
|---|---|---|
| nominative | rosa | rosae |
| vocative | rosa | rosae |
| accusative | rosam | rosas |
| genitive | rosae | rosarum |
| dative | rosae | rosis |
| ablative | rosa | rosis |

# Activity #3.2

- Create the paradigm for the most frequent regular noun of your native language

# Activity #3.3

- Create the paradigm for the Latin adjective "bonus,-a,-um"

| CASE | MASCULINE | | FEMININE | | NEUTER | |
|---|---|---|---|---|---|---|
| | SNG | PLR | SNG | PLR | SNG | PLR |
| NOM | bonus | boni | bona | bonae | bonum | bona |
| VOC | bone | boni | bona | bonae | bonum | bona |
| ACC | bonum | bonos | bonam | bonas | bonum | bona |
| GNT | boni | bonorum | boni | bonarum | boni | bonorum |
| DAT | bono | bonis | bonae | bonis | bono | bonis |
| ABL | bono | bonis | bona | bonis | bono | bonis |

# Activity #3.4

- Create the paradigm for the most frequent regular adjective of your language

# Activity #3.5

- Create the paradigm for the English verb "to unify"

# Activity #3.6

- Create the paradigm for the most frequent regular verb of your language

# Subcategorization

# Arguments

## NECESSARY ARGUMENTS
### (SPECIFIERS AND COMPLEMENTS)

- CANNOT BE SUPPRESSED
  - *killed Mary
  - *Peter killed
  - *Peter killed Mary with
  - *Peter went
  - *is beautiful

## OPTIONAL ARGUMENTS
### (ADJUNCTS)

- CAN BE SUPPRESSED
  - Mary killed Peter (with a knife)
  - I like (old) books
  - She is (very) beautiful

# Subcategorization

| VALENCY | EXAMPLES |
|---|---|
| 0 | book, computer, table<br>New York, Yerevan, Armenia<br>beautiful, ugly,<br>yesterday, happily |
| 1 | arrival (of John)<br>(the) United States, (the) United Kingdom<br>full (of students)<br>with (Mary)<br>differently (from them)<br>(Mary) died<br>(it) rains |
| 2 | between (Mary) and (John)<br>(Peter) killed (Mary) |
| 3 | (Peter) gave (the book) (to Mary) |

# Subcategorization

**SUBCATEGORIZATION FRAMES**

- REGULAR OR SEMI-REGULAR
- GRAMMAR
- VS(NP) = intransitive verbs that require a NP in the position of a subject

**SUBCATEGORIZATION RULES**

- IRREGULAR
- DICTIONARY
- VS(NP([it])) = intransitive verbs that require a NP = [it] in the position of subject

# Subcategorization frames

- Y0 = AVALENT (no necessary argument)
  - book, computer, beautiful, …
- Y1 = IRREGULAR (very specific subcategorization, to be provided in the dictionary, through subcategorization rules)
  - rain, snow, …
- T2-… to be provided in the grammar (they will be available in the dictionary, through a drop-down menu)
  - intransitive verbs
  - direct transitive verbs
  - indirect transitive verbs that select the preposition X
  - indirect transitive verbs that select the preposition Y
  - …

# S-rules (I)

SYNTACTIC ROLE(ARGUMENT);

- VS(NP);
  - requires a verb specifier which is a NP (die, run, dance)
- VS(NP,NOM);
  - requires a verb specifier which is a NP in the nominative case (die, run, dance)
- VS(NP([it]));
  - requires a verb specifier which is a NP equal to the headword [it] (rain, snow)
- NS(DP([the]));
  - requires a noun specifier which is a DP equal to the headword [the] (United States, United Kingdom)

# S-rules (II)

- VS(NP)VC(NP);
  - requires a verb specifier (which is a NP) and verb complement (which is also a NP) (kill, know, contain)
- VS(NP,NOM)VC(NP,ACC);
  - requires a verb specifier (which is a NP in the nominative case) and a verb complement (which is a NP in the accusative case); (kill, know, contain)
- VS(NP,NOM)VC(NP,ACC)VC(NP,DAT);
  - requires a verb specifier (which is a NP in the nominative case), a first verb complement (which is a NP in the accusative case) and a second verb complement (which is a NP in the dative case)

# S-rules (III)

- VS(NP)VC(PH([of]));
  - requires a verb specifier (which is a NP) and a verb complement (which is a prepositional phrase headed by the preposition [of]

# Important!

- The order of the relations is not important:
  - VS(NP)VC(NP) = VC(NP)VS(NP)
- In case order is relevant, the attribute adjacency must be used
  - VS(NP)VC(ACC,AJ1)VC(DAT,AJ2)
- The arguments must be represented by their corresponding maximal projection (NP,VP,etc.) or by a XH relation in case the argument is necessarily headed by a given word:
  - VS(NP)VC(NP);
  - VS(NP)VC(PH([of]));

# Important! (2)

- The arguments may have as many features as necessary, provided that they are necessary and represented according to the Tagset.
  - VS(NP,PPR,NOM);
- Strings must be represented between "quotes" while headwords must be represented between [brackets]
  - VC(PH([of]));
  - VC("to the lions");
- Alternatives are indicate between { | }
  - VC(PH({[of]|[on]}));

# Examples

- NC(PH([of]));
  - intention, lack, result, smell, taste
- NC(PH([to]));
  - access, alternative, exception, invitation, solution
- NC(PH([for]));
  - admiration, credit, desire, hope
- NC(PH([on]));
  - attack, authority, effect, expert, influence

# Activity #4

# Activity #4.1

- Create, in the UNLsandbox, the subcategorization frames necessary to describe the dependencies of the following English words:
  - comparison
  - capable
  - to sell
  - to persuade

# Activity #4.2

- Create, in the UNLsandbox, the subcategorization frames necessary to describe the dependencies of the following items of your native language:
  - the most frequent valent noun
  - the most frequent valent adjective
  - the most frequent valent adverb
  - the most frequent valend verb