

XV UNL School

Geneva, July 21-25, 2014

Program

- ~~July 21st~~
 - ~~Introduction~~
 - ~~Normalization~~
 - corpus_org_<ID>.txt
 - ngrammar_<ID>.txt
- July 22nd
 - Tokenization
- July 23rd
 - UNLization
- July 24th
 - NLization
- March 14th
 - Evaluation & Discussion



Day #2

Morning

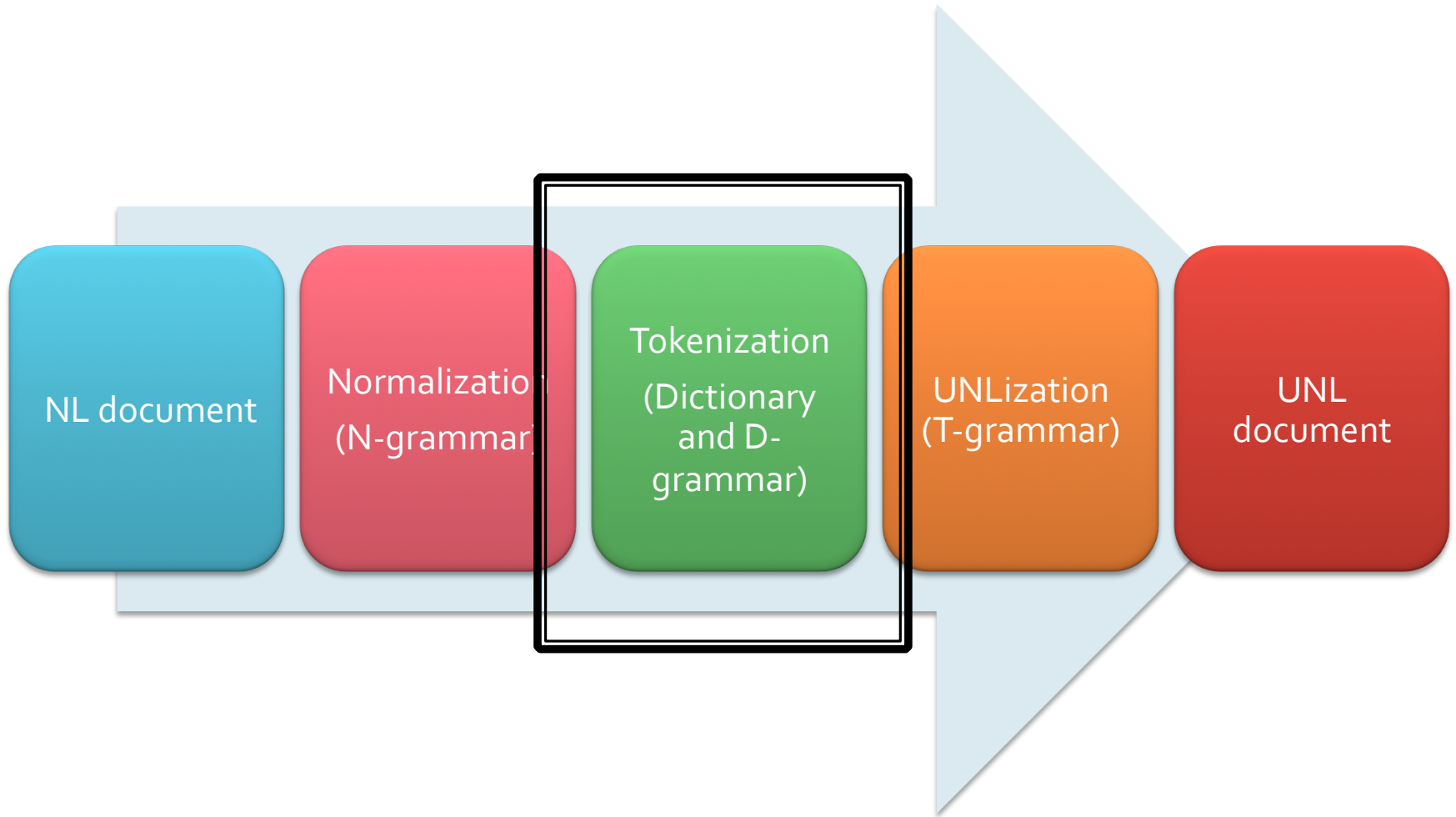
- Dictionary
- D-grammar

Lunch break

Afternoon

- Morphology (Analysis)
- Morphology (Generation)

Goal



Dictionary

Exercise #4 (90 min)

- Goal: To prepare the dictionary for the training corpus
- Deliverable:
 - *dic_<ID>.txt*
- Activities:
 - www.unlweb.net/wiki/XV_UNL_School

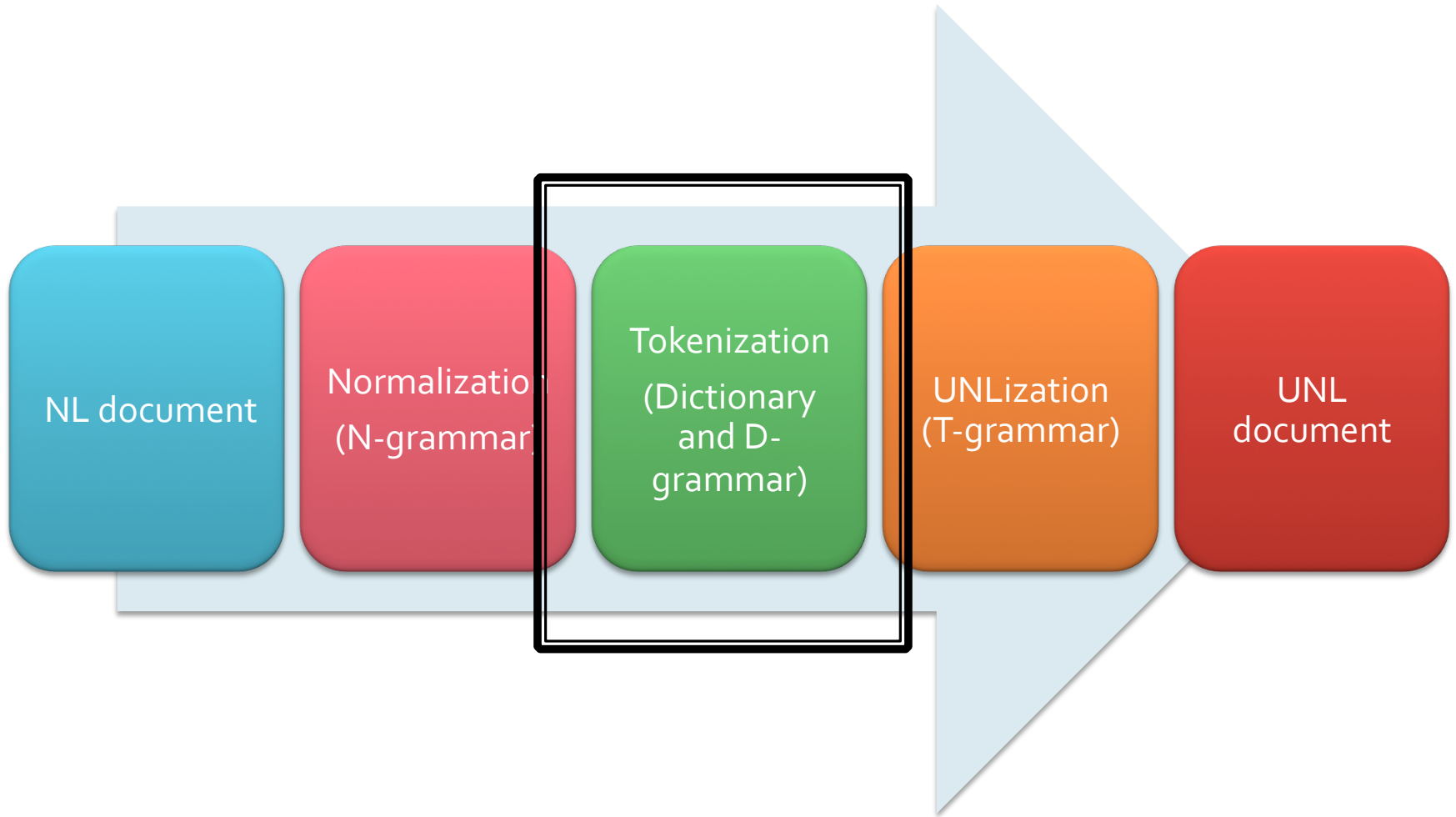
SLUURP



Coffee break

Tokenization

Goal



D-Grammar

Whis is this necessary?

- Input: "this is necessary"
- Dictionary:
 - []{}""(BLK)<eng,o,o>;
 - [this]{}""(LEX=D,POS=DEM,att=@proximal) <eng,o,o>;
 - [this]{}""(LEX=R,POS=DEP,att=@proximal)<eng,o,o>;
 - [is]{}""(LEX=I,POS=AUX) <eng,o,o>;
 - [is]{}""(LEX=V,POS=COP) <eng,o,o>;
 - [necessary]{}""(LEX=N,POS=NOU) <eng,o,o>;
 - [necessary]{}""(LEX=J,POS=ADJ) <eng,o,o>;
- Tokenization
 - (this,D)(BLK)(is,I)(BLK)(necessary,N)
- D-Grammar
 - (D)(BLK)(I)=0;
 - (this,D)(BLK)(is,V)(BLK)(necessary,N)
 - (D)(BLK)(I)=0; (D)(BLK)(V)=0;
 - (this,R)(BLK)(is,V)(BLK)(necessary,N)
 - (D)(BLK)(I)=0; (D)(BLK)(V)=0; (V)(BLK)(J)=1;
 - (this,R)(BLK)(is,V)(BLK)(necessary,J)

Exercise #5 (30 min)

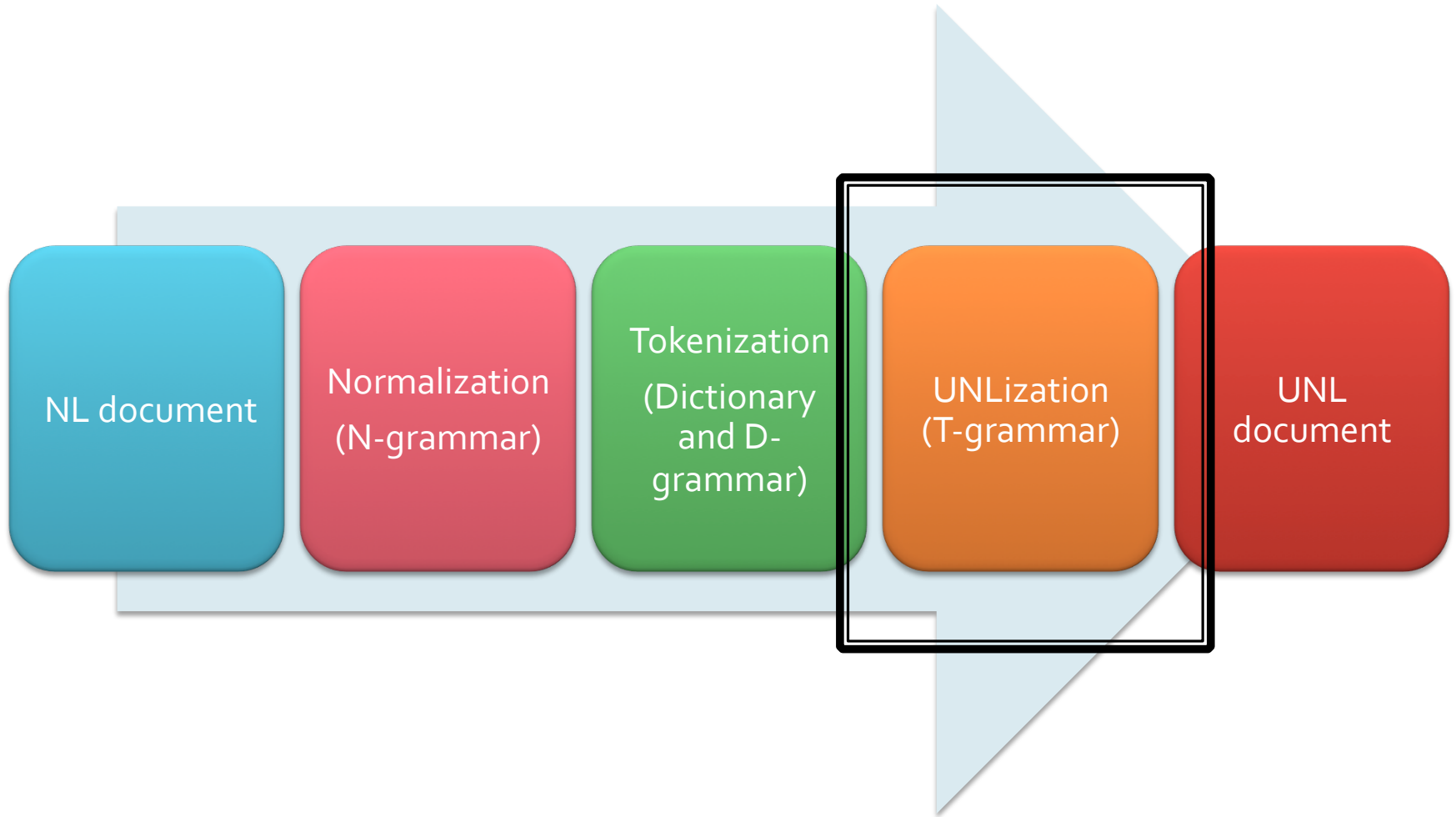
- Goal: To prepare the d-grammar for the training corpus
- Deliverable:
 - *dgrammar_<ID>.txt*
- Activities:
 - www.unlweb.net/wiki/XV_UNL_School



Lunch Break

UNLization

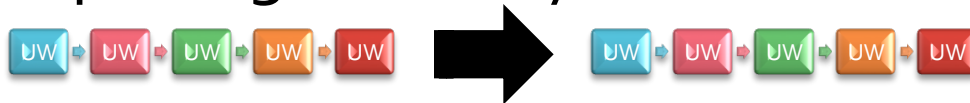
Goal



UNLization

- Transformation

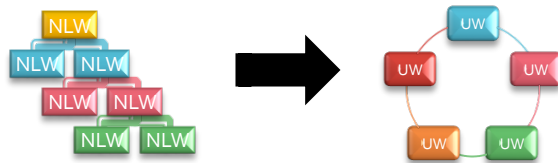
- Morphological Analysis



- Syntactic Analysis



- Semantic Analysis



Morphology

Analysis

■ Inflectional

■ party>parties

- (PLR, ^@pl):=(+att=@pl);

■ go>went

- (PAS, ^@past):=(+att=@past);

■ Agglutinative

■ the book

- ("the", %x)("book", %y):=(%y, +att=@def);

■ male teacher

- ("male", %x)("teacher", %y):=(%y, +att=@male);

Observations

- Generalization (1)

- ("the",%x)("book",%y):=(%y,+att=@def);
- ("the",%x)("girl",%y):=(%y,+att=@def);
- ("the",%x)("table",%y):=(%y,+att=@def);
- ...
- ("the",%x)(N,%y):=(%y,+att=@def);

- Generalization (2)

- ("the",%x)(N,%y):=(%y,+att=@def);
- ("a",%x)(N,%y):=(%y,+att=@indef);
- ("all",%x)(N,%y):=(%y,+att=@all);
- ...
- (D,%x)(N,%y):=(%y,+att=%x);

Examples from English (I)

- All human beings are born free and equal in dignity and rights.
 - all + human beings = human beings.@all
 - ("all",%x)("human beings",%y):=(%y,+att=@all);
 - (D,%x)(N,%y):=(%y,+att=%x);
 - human beings = human beings.@pl
 - rights = rights.@pl
 - (N,PLR,^@pl):=(+att=@pl);

Examples from English (II)

- They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.
 - should + act = act.@obligation
 - ("should",%x)(V,%y):=(%y,+att=@obligation);
 - (MOV,%x)(V,%y):=(%y,+att=%x);
 - a + spirit = spirit.@indef
 - (D,%x)(N,%y):=(%y,+att=%x);

Examples from English (III)

- Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.
 - rights = rights.@pl
 - freedoms = freedoms.@pl
 - (N,PLR,^@pl):=(+att=@pl);
 - any + kind = kind.@any
 - other + opinion = opinion.@other
 - other + status = status.@other
 - this + declaration = declaration.@proximal
 - (D,%x)(N,%y):=(%y,+att=%x);

Examples from English (IV)

- Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self-governing or under any other limitation of sovereignty.
 - no + distinction = distinction.@no
 - the + country = country.@def
 - a + person = person.@indef
 - other + limitation = limitation.@other
 - any + limitation = limitation.@any
 - (D,%x)(N,%y):=(%y,+att=%x);
 - shall + be = be.@obligation
 - ("shall",%x)(V,%y):=(%y,+att=@obligation);
 - (MOV,%x)(V,%y):=(%y,+att=%x);
 - non + - + self-governing = self-governing.@not
 - ("non")("-")(J,%x):=(%x,+att=@not);
 - the political, jurisdictional or international status = status.@def

Examples from English (V)

- Everyone has the right to life, liberty and security of person.
 - the + right = right.@def
 - (D,%x)(N,%y):=(%y,+att=%x);
- No one shall be held in slavery or servitude;
 - shall + be = be.@obligation
 - (MOV,%x)(V,%y):=(%y,+att=%x);
- slavery and the slave trade shall be prohibited in all their forms.
 - the + slave = slave.@def
 - (D,%x)(N,%y):=(%y,+att=%x);
 - shall + be = be.@obligation
 - (MOV,%x)(V,%y):=(%y,+att=%x);
 - all their forms

Examples from English (VI)

- No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.
 - shall + be = be.@obligation
 - (MOV,%x)(V,%y):=(%y,+att=%x);

English Morphology (Analysis)

- $(D, \%x)(N, \%y) := (\%y, +att=\%x);$
- $(MOV, \%x)(V, \%y) := (\%y, +att=\%x);$
- $(N, PLR, ^{@pl}) := (+att=@pl);$
- $(\text{"non"})(\text{"-"})(J, \%x) := (\%x, +att=@not);$

- $(BLK) = ;$

Result

- Article 1
- All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and ~~should~~ act towards one another in a spirit of brotherhood.
- Article 2
- Everyone is entitled to ~~all the~~ rights and freedoms set forth in ~~this~~ Declaration, without distinction of ~~any~~ kind, such as race, colour, sex, language, religion, political or ~~other~~ opinion, national or social origin, property, birth or ~~other~~ status. Furthermore, ~~no~~ distinction ~~shall~~ be made on the basis of the political, jurisdictional or international status of ~~the~~ country or territory to which a person belongs, whether it be independent, trust, ~~non~~-self-governing or under ~~any other~~ limitation of sovereignty.
- Article 3
- Everyone has ~~the~~ right to life, liberty and security of person.
- Article 4
- No one ~~shall~~ be held in slavery or servitude; slavery and ~~the~~ slave trade ~~shall~~ be prohibited in all their forms.
- Article 5
- No one ~~shall~~ be subjected to torture or to cruel, inhuman or degrading treatment or punishment.

Exercise #6 (60 min)

- Goal: To prepare the morphological module for the analysis of the training corpus
- Deliverable:
 - *morphology_ana_<ID>.txt*
- Activities:
 - www.unlweb.net/wiki/XV_UNL_School

Morphology

Generation

- Inflectional
 - party.@pl>parties
 - (@pl):=(+NUM=PLR,-@pl);
 - go.@past>went
 - (@past):=(+ATE=PAS,-@past);
- Agglutinative
 - book.@def = the book
 - (%x,@def):=("the")(" ")(%x,-@def);
 - teacher.@male = male teacher
 - (%x,@male):=("male")(" ")(%x,-@male);

Agreement

- Gender & Number
 - livre.@def = le livre
 - table.@def = la table
 - livre.@def.@pl = les livres
 - table.@def.@pl = les tables
 - (%x,@def,^@pl,^PLR,MCL):=("le")(" ")(%x,-@def);
 - (%x,@def,^@pl,^PLR,FEM):=("la")(" ")(%x,-@def);
 - (%x,@def,PLR):=("les")(" ")(%x,-@def,-@pl);

Examples from English (I)

- human beings.@all are born free and equal in dignity and right.@pl. They are endowed with reason and conscience and act.@obligation towards one another in spirit.@indef of brotherhood.
 - (%x,N,@all):=("all")(" ")(%x,-@all,+@pl);
 - (N,@pl,^PLR):=(o>"s",-@pl,+PLR);
 - (N,@pl,PLR):=(-@pl);
 - (%x,V,@obligation):=("shall")(" ")(%x,-@obligation)
 - (%x,N,@indef):=("a")(" ")(%x,-@indef);

Examples from English (II)

- Everyone is entitled to right.@all.@def.@pl and freedom.@pl set forth in Declaration.@proximal, without distinction of kind.@any, such as race, colour, sex, language, religion, political or opinion.@other, national or social origin, property, birth or status.@other.
 - (%x,N,@def):=("the")(" ")(%x,-@def);
 - (%x,N,@proximal,^PLR,^@pl):=("this")(" ")(%x,-@proximal);
 - (%x,N,@any):=("any")(" ")(%x,-@any)
 - (%x,N,@other):=("other")(" ")(%x,-@other);

Examples from English (III)

- Furthermore, distinction.@no
be.@obligation made on the basis of the political, jurisdictional or international status of country.@def or territory to which person.@indef belongs, whether it be independent, trust, self-governing.@not or under limitation.@any.@other of sovereignty.
 - (%x,N,@no):=("no")(" ")(%x,-@no);
 - (%x,J,@not):=("not")("-")(%x,-@not);

English Morphology (Generation)

- (N, @pl, ^PLR):=(o>"s", -@pl, +PLR);
- (N, @pl, PLR):=(-@pl);
- (%x, N, @all):=("all")(" ")(%x, -@all, +@pl);
- (%x, N, @indef):=("a")(" ")(%x, -@indef);
- (%x, N, @def):=("the")(" ")(%x, -@def);
- (%x, N, @proximal, ^PLR, ^@pl):=("this")(" ")(%x, -@proximal);
- (%x, N, @any):=("any")(" ")(%x, -@any)
- (%x, N, @other):=("other")(" ")(%x, -@other);
- (%x, N, @no):=("no")(" ")(%x, -@no);
- (%x, J, @not):=("not")("-")(%x, -@not);
- (%x, V, @obligation):=("shall")(" ")(%x, -@obligation)

Exercise #7 (60 min)

- Goal: To prepare the morphological module for the generation of the training corpus
- Deliverable:
 - *morphology_gen_<ID>.txt*
- Activities:
 - www.unlweb.net/wiki/XV_UNL_School



That's all, Folks!