Formalizing atomic rules in textual entailments

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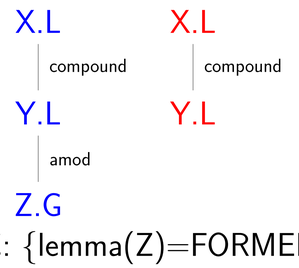
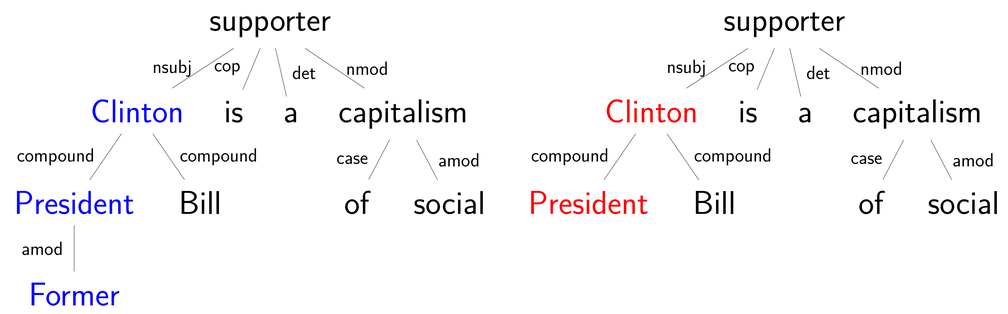
I: Former President Bill Clinton is a supporter of "social capitalism".
O: President Bill Clinton is a supporter of "social capitalism".



C: {lemma(Z)=FORMER, title(Y), proper_name(X)}
S: DF



Each rule maps from one text into another.

- Pairs of texts originate from the translated and expanded RTE-3 corpus.
- Formally a rule is a quintuple ⟨ Left-Hand Side, RIght-Hand Side, **C**onditions of Applicability, **S**trength Specification, **P**olarity signature ⟩.
- Many rules are Polish-specific.

Strength specification ("**S**") takes values:

"S" for strong
"DF" for defeasible (e.g. conversational implicatures)
"WTF" for wishfull thinking fallacies.

Polarity signature is a quadruple whose elements represent pairs of texts:

- a text matching LHS and a text matching RHS
- as above but in negative polarity contexts
- a text matching RHS and a text matching LHS
- as above but in negative polarity contexts

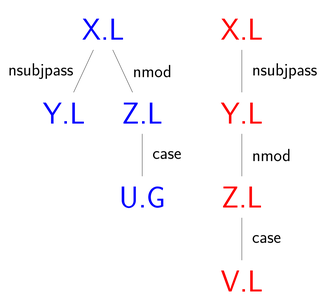
Possible values for each element are:

"+" the pair is in entailment relation
"−" the pair is in entailment relation if the polarity of the consequent is reversed
"○" neither of the above

LHS and RHS are syntactic dependency trees to be matched with dependency (sub)trees of the input text and the output text. Apart of syntactic dependencies, matching involves

- Morphosyntactic information given in the tree nodes.
- Lexical identity encoded as "lemma(X)=..." or "lemma(X) ∈ {...}".
- Other semantic applicability constraints defined in the third element of the rule.

I: In an Austrian hospital three nurses have been arrested on suspicion of killing patients.
O: Three nurses from an Austrian hospital have been arrested on suspicion of killing patients.

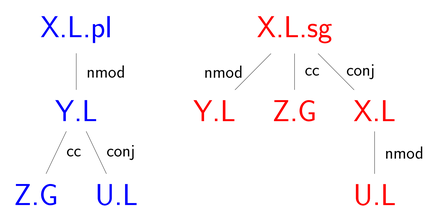


C: {lemma(U)=IN, lemma(V)=FROM, workplace(Z,Y), employer(Z,Y)}
S: DF

I: Dopiero śmierć uwolniła Swifta z apatii w 1745 r.
O: Swift zmarł w 1745 r.

C: {lemma(X)=UWOLNIĆ, lemma(Y)=ŚMIERĆ, lemma(U)=ZEMRZEĆ, tense(X)=tense(U)}
S: S
P: +/○/○/+

I: During Civil War the governments of the United States and the Confederacy began purchasing arms in Britain.
O: During Civil War the government of United States and the government of Confederacy began purchasing arms in Britain.



C: {lemma(U)∈{AND, BUT}}
S: DF