Towards Syntactic Analysis of Verbal Negation in Polish

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Word Order

(1) *Ania nie mieszka w Tybindze.*
Ania not lives in Tübingen
'Ania doesn't live in Tübingen.'

(2) *Nie Ania mieszka w Tybindze, tylko Adam.*
not Ania lives in Tübingen, only Adam.

(3) *Ania mieszka nie w Tybindze, tylko w Warszawie.*
Ania lives not in Tübingen, only in Warsaw.

(4) *Może, kurwa, go nie wal tym łomem?!*
maybe EXPL him not batter this crowbar
'Why don't you fucking stop battering him with this crowbar?!'

(5) *Może go, kurwa, nie wal tym łomem?!*
* *Może go nie, kurwa, wal tym łomem?!*
Może go nie wal, kurwa, tym łomem?!
Może go nie wal tym, kurwa, łomem?!

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Coordination

(6) *Czytam i rozumiem książki.*
read and understand books
'I read and understand books.'

(7) * *Nie [czytam i rozumiem] książek.*
not read and understand books
'I don't read and understand books.'

(8) *Nie czytam i nie rozumiem książek.*
not read and not understand books
'I don't read and don't understand books.'

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Lexical Exceptions: Copula 1

(9) *Książka jest na stole.*
book$_{nom}$ is on table
'(a/the) book is on (a/the) table.'

(10) a. *Książka nie jest na stole.*
b. *Książki nie ma na stole.*
book$_{gen}$ not have on table
'(the) book is not on (a/the) table.'

(11) a. *Książka nie jest na stole, tylko na półce.*
book not is on table, only on shelf
b. * *Książki nie ma na stole, tylko na półce.*

$\neg \exists x \; book(x) \wedge on\_table(x)$:

(12) a. *Na stole nie ma książki.*
b. * *Książka nie jest na stole.*

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Lexical Exceptions: Copula 2

(13) a. *Jest czego żałować.* → *Nie ma czego żałować.*
is something regret_{inf} → not has something regret_{inf}
'... → There is nothing to be sorry about.'

b.* *Nie jest czego żałować.*

(14) a. *Jest gdzie się kąpać.* → *Nie ma gdzie się kąpać.*
is where SELF bathe_{inf} → not has where SELF bathe_{inf}
'... → There is no place to bathe.'

b.* *Nie jest gdzie się kąpać.*

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Other Exceptions

(15) a. *(Nie) przypuszczam, że przyszedł.*
(not) presume-I that came-he
'I (don't) presume that he came.'

b.* *Przypuszczam, żeby przyszedl.*

c. *Nie przypuszczam, żeby przyszedl.*

(16) a. *Cierpiał wiele.* → *Nie cierpiał wiele.*
suffered-he a lot → not suffered a lot
'He suffered a lot. → He didn't suffer much.'

b. **(Nie) cierpię słuchać jak gadasz takie bzdury.*
not suffer-I listen_{inf} as speak-you such rubbish
'I hate listening to that rubbish you say.'

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Verbal Negation Lexical Rule

$$\begin{bmatrix} \textit{word} \\ \text{PHON } \boxed{1} \\ \text{SYNSEM}\mid\text{LOC}\mid\text{CAT}\mid\text{HEAD } \begin{bmatrix}\textit{verb}\\ \text{NEG } -\end{bmatrix}\end{bmatrix} \Rightarrow \begin{bmatrix} \textit{word} \\ \text{PHON } \langle \text{nie} \rangle \oplus \boxed{1} \\ \text{SYNSEM}\mid\text{LOC}\mid\text{CAT}\mid\text{HEAD } \begin{bmatrix}\textit{verb}\\ \text{NEG } +\end{bmatrix}\end{bmatrix}$$

(17) *Nie NIE lubię Marysi, ale też za nią nie przepadam.*
not not like-I Mary but also of her not be-fond
'I don't dislike Mary but I'm not particularly fond of her either.'

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Obligatory Arguments

(18) *Nikt *(nie) przyszedł.*
nobody not came
'Nobody came.'

(19) *Marysia niczego *(nie) dała Jankowi.*
Mary nothing not gave John
'Mary didn't give John anything.'

(20) *Marysia nikomu *(nie) dała książki.*
Mary nobody not gave book
'Mary didn't give anyone a/the book'.

(21) *O niczym *(nie) opowiadałem.*
about nothing talked-I
'I didn't talk (tell stories) about anything.'

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Modifiers

(22) *Niczym *(nie) pojechałem, poszedłem na*
with nothing not went-I, went on
piechotę.
foot
'I took none of them, I went on foot.'

(23) *Z nikim *(nie) przechadzałem się po*
with nobody not strolled-I SELF on
Hradčanach.
Hradčany
'I didn't stroll with anybody at Hradčany.'

(24) *Nigdy *(nie) prosił o pomoc.*
never not asked-he about help
'He never asked for help.'

(25) *Nigdzie wczoraj *(nie) poszedł.*
nowhere yesterday not went-he
'He didn't go anywhere yesterday.'

(26) *Maria wcale *(nie) podróżuje.*
Mary at all not travels
'Mary does not travel at all.'

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niczyj

(27) *Niczyje prośby mnie *(nie) wzruszają.*
nobody's requests me not move
'I'm indifferent to anybody's requests.'

(28) **(Nie) zabrałem niczyjej książki, ta jest*
not took-I nobody's book this is
moja.
mine
'I didn't take anybody's book, this one is mine.'

(29) **(Nie) spotkaliśmy się na niczyim przyjęciu,*
not met-we self at nobody's party
tylko w kinie.
but in cinema
'We met at nobody's party but in the cinema.'

(30) *Już dawno *(nie) plotkowaliśmy o*
already long time not gossiped-we about
niczyich żonach.
nobody's wives
'We haven't been gossiping about wives of anybody for a long time.'

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żaden

(31) *Żadna rozmowa z Jankiem *(nie) była*
none conversation with John not was
interesująca.
interesting
'No conversation with John was interesting.'

(32) **(Nie) chciałem żadnej książki.*
not wanted-I none book
'I didn't want any book.'

(33) **(Nie) dawałem adresu żadnej dziewczynie.*
not gave-I address none girl
'I didn't give any girl my address.'

(34) **(Nie) szłam z żadnym chłopcem.*
not walked-I with none boy
'I didn't walk with any boy.'

(35) **(Nie) można się z nim skontaktować w*
not can self with him get in touch in
żaden sposób.
no way
'There is no way to get in touch with him.'

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Unbounded?

(36) *Bibliografia syna żadnego prezydenta*
bibliography son$_{poss}$ none president$_{poss}$
*mnie *(nie) zainteresowała.*
me not interested
'No bibliography of any president's son was interesting for me.'

(37) **(Nie) słuchałem plotek o nikim.*
not listened-I gossip about nobody
'I was not listening to gossip aboud anybody.'

(38) *Moje stopy *(nie) tolerują butów z*
my feet not tolerate shoes from
NICZEGO, muszę chodzić boso.
nothing must-I go barefoot
'my feet can't stand shoes made of anything, I have to walk barefooted'.

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Unbounded!

(39) **(Nie) lubię smaku konfitur z owoców z niczyjego ogrodu, oprócz* not like-I taste of preserves from fruits from nobody's garden, apart *własnego.* my own
'I don't like the taste of preserves made of fruit from anybody's garden, apart from (these made of fruit from) my own.'

(40) *Gazety z plotkami o żonach władców państw ŻADNEGO* Newspapers with rumours about wives of rulers of countries of none *KONTYNENTU *(nie) są tak interesujące, jak te z plotkami o* continent not are so interesting as these with rumours about *żonach władców państw afrykańskich.* wives of rulers of countries African
'No newspapers with gossip about wives of rulers of countries of any continent are so interesting, as those containing gossip about wives of rulers of African countries.'

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Subordinate Clauses

(41) *Jan powiedział, że niczego *(nie) widział.* John said that nothing not saw-he
'John said that he didn't see anything.'

(42) * *Jan nie powiedział, że niczego widział.*

(43) *Jan prosił, żeby niczego *(nie) ruszać.* John asked that nothing not touch$_{inf}$
'John asked not to touch anything.'

(44) * *Jan nie prosił, żeby niczego ruszać w jego pokoju.*

(45) *Jan zapytał, jakiej muzyki nikt *(nie) lubi.* John asked what music nobody not likes
'John asked what kind of music nobody likes.'

(46) * *Jan nie zapytał, jakiej muzyki nikt lubi.*

(47) *Człowiek, który nikomu *(nie) ufał, został* man who nobody not trusted became *prezydentem.* president
'The man who trusted nobody became a president.'

(48) * *Człowiek, który nikomu ufał, nie został prezydentem.*

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Analysis: Unbounded Dependency

Long distance negative concord as an unbounded dependency:

- negative pronouns such as *nic*, *nigdy* and *żaden*, etc., introduce "negation requirement" to be bound;
- some categories, like nouns and prepositions, simply pass this negation requirement higher up the tree;
- other categories, like negated verbs, bind negation, i.e., "remove it from the SLASH" in terms of GPSG and HPSG;
- yet other categories, such as non-negated verbs, neither bind negation, nor pass it higher up, i.e., they do not allow arguments with unbounded negation (they create islands).

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Analysis: Lexical Approach to UDCs

- "negation requirement" discharged by lexical items (e.g., negated verbs), i.e., V[+NEG];
- intriguing lexical exception, preposition *bez*:

(49) *Zaczął bez* **żadnych** *wstępów.* started-he without none introductions
'He started straight away.'

(50) *I bez* **niczyich** *wskazówek wiem jak to zrobić.* and without nobody's hints know-I how this do$_{inf}$
'I don't need anybody's hints to be able to do that.'

(51) *Został bez* **niczego**. stayed-he without nothing
'He was left broke.'

- lexical approach to UDCs of Sag (1995a).

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HPSG Analysis

- non-local attribute, NEGATIVE-CONCORD (abbreviated to NEG-CONC), possible values: $+$ and $-$;
- introducing UD: negative pronouns are NEG-CONC$+$;
- percolation: in 2 steps:
  - all lexical items which allow percolation of negation (e.g., nouns) specify the value of their NEG-CONC as $+$ if at least one of their arguments is NEG-CONC$+$, as $-$ otherwise;
  - Negation Inheritance Constraint (NIC):

headed-phrase $\rightarrow$

$$\begin{bmatrix} \text{SYNSEM|NON-LOCAL|NEG-CONC } \boxed{1} \\ \text{DTRS|HEAD-DTR|SYNSEM|NON-LOCAL|NEG-CONC } \boxed{1} \end{bmatrix}$$

- cancelation: lexical items which cancel negation percolation (e.g., negated verbs, *bez*) have NEG-CONC = $-$;
- islands (e.g., non-negated verbs): conjunction of the two above conditions, i.e., simultaneous cancelation and percolation.

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Lexical Analysis: Summary

- $\begin{bmatrix} \textit{word} \\ \text{PHON } \langle \text{nikt} \rangle \\ \text{SYNSEM|NL|NEG-CONC } + \end{bmatrix}$
- $\begin{bmatrix} \textit{word} \\ \text{SS|L|CAT|HEAD verb} \end{bmatrix} \rightarrow \begin{bmatrix} \text{SS|NL|NEG-CONC } - \end{bmatrix}$
- $\begin{bmatrix} \textit{word} \\ \text{SS|L|CAT} \begin{bmatrix} \text{HEAD noun} \vee \text{verb[NEG}-] \\ \text{ARG-S } \boxed{1}\text{list(synsem)} \end{bmatrix} \end{bmatrix} \rightarrow$

  $\begin{bmatrix} \text{SS|NON-LOC|NEG-CONC sum\_neg(} \boxed{1} \text{)} \end{bmatrix}$

sum_neg($\langle\rangle$) := $-$.

sum_neg($\langle \begin{bmatrix} \text{SS|NL|NEG-CONC } + \end{bmatrix} \rangle \oplus$ list(synsem)) := $+$.

sum_neg($\langle \begin{bmatrix} \text{SS|NL|NEG-CONC } - \end{bmatrix} \rangle \oplus \boxed{1}$) :=
 sum_neg($\boxed{1}$).

- *headed-phrase* $\rightarrow$

$$\begin{bmatrix} \text{SS|NL|NEG-CONC } \boxed{1} \\ \text{DTRS|HEAD-DTR|SS|NL|NEG-CONC } \boxed{1} \end{bmatrix}$$

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Analysis: Example 1

(52) *Mówię bez żadnych handoutów.*
 speak-I without none handouts
 'I am speaking without any handouts.'

- *żadnych*: lexically specified as NEG-CONC$+$;
- *handoutów*: a noun, so its NEG-CONC is $+$ iff NEG-CONC of any of its arguments is $+$. The only argument is *żadnych*, it is NEG-CONC$+$, so *handoutów* is also NEG-CONC$+$;
- *żadnych handoutów*: a phrase, its NEG-CONC is token identical to NEG-CONC of the head (i.e., *handoutów*) because of the Negation Inheritance Constraint (NIC), i.e., it is $+$;
- *bez*: lexically specified as NEG-CONC$-$, does not look at its argument *żadnych handoutów*, negation requirement introduced by *żadnych* is discharged here; again, by NIC, the whole phrase *bez żadnych handoutów* is NEG-CONC$-$;
- *mówię*: non-negated verb, its NEG-CONC, as well as NEG-CONC of its arguments are $-$. The only argument is *bez żadnych handoutów*, it is $-$, OK.

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Analysis: Example 2

(53)* *Mówię z żadnymi handoutami.*
 speak-I with none handouts
 'I am speaking with no handouts.'

- *żadnymi handoutami*: as above, i.e., NEG-CONC$+$;
- *z*: preposition other than *bez*, i.e., NEG-CONC$+$ iff any of its arguments is NEG-CONC$+$. Since *żadnymi handoutami* is NEG-CONC$+$, so is *z*;
- *z żadnymi handoutami*: by NIC, its NEG-CONC value is the same as that of *z*, i.e., it is $+$;
- *mówię*: non-negated verb, its NEG-CONC, as well as NEG-CONC of its arguments are $-$. The only argument is *z żadnymi handoutami*, it is $+$, contradiction, the phrase is ungrammatical.

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Verb Clusters

and Negative Concord

When any of the arguments of the lowest verb is (contains) a negative pronoun, any of the verbs in the cluster can be negated (as long as one of them is):

(54) *Jan chciał niczego *(nie) kupować.*
John wanted nothing not buy$_{inf}$
'John wanted not to buy anything.'

(55) *Jan *(nie) chciał niczego kupować.*

(56) *Jan *(nie) chciał próbować nikogo pokochać.*
John not wanted try$_{inf}$ nobody love$_{inf}$
'John didn't want to try to love anybody.'

(57) *Jan chciał *(nie) próbować nikogo pokochać.*

(58) *Jan chciał próbować nikogo *(nie) pokochać.*

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Verb Clusters

and Genitive of Negation

(59) *Jan chciał kupić ten dom.*
John wanted buy$_{inf}$ this$_{acc}$ house$_{acc}$
'John wanted to buy this house.'

(60) *Jan nie chciał kupić tego domu.*
John not wanted buy this$_{gen}$ house$_{gen}$

(61) *Jan chciał nie kupić tego domu.*

(62) *Mogę chcieć to napisać.*
may-I want$_{inf}$ this$_{acc}$ write$_{inf}$
'I might want to write this.'

(63) *Nie mogę chcieć tego napisać.*
not may-I want$_{inf}$ this$_{gen}$ write$_{inf}$

(64) *Mogę nie chcieć tego napisać.*

(65) *Mogę chcieć tego nie napisać.*

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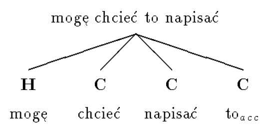
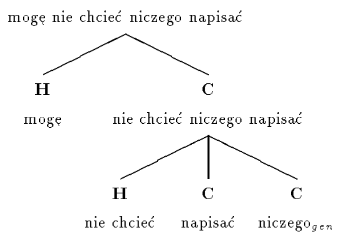
Analysis: The Idea

Verb clusters in Polish normally have flat structure, i.e., argument attraction of Hinrichs and Nakazawa (1989) style takes place:



However, negation stops argument attraction:



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Analysis: Raising

Two entries of each verb taking a "verb phrase" kind of complement: one taking a non-negated verb (word!) and raising all its arguments, and another, taking a negated VP (phrase!) whose non-subject arguments have been cancelled off:

$$\begin{bmatrix} \textit{word} \\ \text{PHON } \langle \text{chcieć} \rangle \\ \text{SS|L|C} \begin{bmatrix} \textit{cat} \\ \text{HEAD verb[NEG}-] \\ \text{ARG-S } \langle \text{NP}, \begin{bmatrix} \textit{local} \\ \text{L|C} \begin{bmatrix} \textit{cat} \\ \text{HEAD verb[NEG } \{_1 +, -\}] \\ \text{LEX } \{_1 -, +\} \\ \text{COMPS } \boxed{1} \end{bmatrix} \end{bmatrix} \rangle \oplus \boxed{1} \end{bmatrix} \end{bmatrix}$$

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Analysis: Realized

- Przepiórkowski (1996b): non-configurational analysis of case assignment in traceless dialects of HPSG. Argument structure:

$$\text{ARG-S: list}(\begin{bmatrix} \textit{arg} \\ \text{ARG synsem} \\ \text{REALIZED bool} \end{bmatrix})$$

- Structural case assignment principle is tuned to REALIZED+ arguments only.
- So should be case percolation principles, i.e.:

$\text{sum\_neg}(\langle\rangle) := -.$

$$\text{sum\_neg}(\langle \begin{bmatrix} \text{ARG|SS|NL|NEG-CONC} & + \\ \text{REALIZED} & + \end{bmatrix} \rangle \oplus \text{list}) := +.$$

$$\text{sum\_neg}(\langle \neg \begin{bmatrix} \text{ARG|SS|NL|NEG-CONC} & + \\ \text{REALIZED} & + \end{bmatrix} \rangle \oplus \boxed{1}) := \text{sum\_neg}(\boxed{1}).$$

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