The Morphosyntax of Polish Verbal Negation: Towards an HPSG Account

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1 Introduction

This paper is concerned with the morphosyntax of Polish verbal negation and aims at providing an HPSG (Head-driven Phrase Structure Grammar, Pollard and Sag (1994)) account of negated verbs in Polish.[1]

As argued in Kupść and Przepiórkowski (1999), among others, the Polish negative marker (NM) *nie* 'not' is a verbal prefix rather than a syntactic item. Such an analysis is supported, for example, by the existence of verbs that have no (regular) negated forms or have only negated forms. Generally speaking, however, verbal negation is a highly regular process and negated and non-negated forms should be related in the lexicon. In the framework of HPSG, such lexical relationships can be captured via lexical rules or lexical constraints. I consider both accounts and show that given the exceptional behavior of certain verbs, lexical constraints are more appropriate.

The organization of the paper is as follows. First, I briefly review the main arguments against a syntactic treatment of verbal negation. Then, I consider a lexical rule account and point out the problems it faces. Finally, I provide an approach based on underspecification in the lexicon and propose a morphosyntactic account of verbal negation.

2 NM as a Verbal Prefix

The Polish negative marker (NM) *nie* 'not', serves (on its own) as a sentential negation marker:

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(1) a. *Janek lubi Marysię.*
John likes Mary_{acc}
'John likes Mary.'

b. *Janek nie lubi Marysi.*
John NM likes Mary_{gen}
'John doesn't like Mary.'

In Polish, the presence of the NM triggers the so-called genitive of negation (GoN): the accusative complement of a non-negated verb, (1a), occurs in the genitive when the verb is negated, (1b).

As argued in Saloni and Świdziński (1985), Dornisch (1997), Witkoś (1998) and especially Kupść and Przepiórkowski (1999), contrary to orthography, the Polish NM *nie* is a verbal prefix rather than a syntactic item. Due to space limitations, we repeat just some of the arguments in favor of such an analysis; the full argumentation can be found in Kupść and Przepiórkowski (1999).[2]

Unlike syntactic items, the NM forms a lexical prosodic unit with a monosyllabic verb (see Rubach and Booij (1985)). The NM has to be obligatorily repeated in each conjunct (if both conjuncts are to be negated) and cannot be omitted.[3] According to Miller (1992), this is a property of affixes but not of syntactic items. The fixed preverbal position of the NM also supports its morphological status. In a free word order language like Polish, the sentential NM always immediately precedes the verb and they can never be split. Furthermore, Polish verbal negation is not a homogeneous phenomenon. Some verbs do not have regularly negated forms (or do not have negated forms at all) and there are verbs which occur only in negated forms. Such arbitrary irregularities are typical of morphology whereas they are quite unusual for syntactic processes. These irregularities are discussed in more detail below.

The most striking exception is the existential/locative copula *być* 'to be/exist'. In the present tense, this verb is negated via (the third neuter singular form of) the verb *mieć* 'to have' rather than a form of 'be', cf. (2).

(2) a. *Książki są na stole.*
books_{nom} are on table
'The books are on a/the table.'

b. *Książek nie ma na stole.*
books_{gen} NM has on table
'The books are not on a/the table.'

[2] On the basis of similar facts, Recourcé (1996) treats the French negative marker *ne* as a prefix of finite verbs.

[3] The obligatory repetition of the Polish NM in coordination does not follow from general properties of negative markers. Note that the English 'not' negates both conjuncts even though it occurs only once, e.g., *Dana will not [walk and talk].*

In the future and past tense, however, (the third neuter singular form of) the verb *być* is used for negation:

(3) *Książek nie było / nie będzie na tamtej półce.*
book$_{gen}$ NM was / NM will-be on that shelf
'The books were not / will not be on that shelf.'

Furthermore, some verbs have no negated forms, see *proszę* '(I) ask' in (4), Saloni and Świdziński (1985),[4] or weak (past tense and conditional) auxiliaries in (5) and (6) (unlike their counterparts in Bulgarian or Serbo-Croatian, cf. Borsley and Rivero (1994)).[5]

(4) a. *Proszę przyjść o siódmej.*
ask-I come at seven
'Please, come at seven.'

b. * *Nie proszę przyjść o siódmej.*
NM ask-I come at seven

(5) a. *Wcale -m nie widział Marii.*
at-all aux.past-I NM saw Mary
'I haven't seen Mary at all.'

b. * *Wcale nie -m widział Marii.*
at-all NM aux.past-I saw Mary

(6) a. *Wcale bym nie widział Marii.*
at-all aux.cond-I NM saw Mary
'I wouldn't see Mary at all.'

b. * *Wcale nie bym widział Marii.*
at-all NM aux.cond-I saw Mary

In contemporary Polish, there are verbs which do not have forms without *nie*, e.g., *nienawidzić / *nawidzić* 'to hate', *nie cierpieć* 'to dislike/detest', (7a), *niepokoić / *pokoić* 'to worry', (7b), *niewolić / *wolić* 'to imprison', etc.[6,7]

[4] This verb is idiosyncratic also in other respects since it has only first person forms.

[5] Both Polish weak auxiliaries are clitics but, as argued in Borsley (1999), they are syntactic items rather than morphological affixes, as might be suggested by the orthography of the past tense auxiliary *m* in (5).

[6] There exists also a regularly negated verb *cierpieć* 'to suffer'. This verb has a different meaning and should be distinguished from the idiomatic *nie cierpieć* 'to detest' in (7a).

[7] I use *(*nie*) to indicate that the sentence is ungrammatical if *nie* is absent.

(7) a. *Nienawidzę / *(nie) cierpię Marysi.*
hate-I NM suffer-I Mary$_{gen}$
'I hate / detest Mary.'

b. *Zachowanie Piotra niepokoi Marysię.*
behavior of-Peter worries Mary$_{acc}$
'Peter's behavior worries Mary.'

Verbs which begin with *nie*, as in (7), do not form a uniform class. Some of them behave as non-negated verbs do, e.g., they can be overtly negated, whereas others already contain the NM.

As (7a) shows, verbs *nienawidzić* or *nie cierpieć* require a genitive complement, an instance of genitive of negation (GoN), just as other verbs do when overtly negated with an NM (cf. Przepiórkowski (1999)). On the other hand, *niepokoić* in (7b) behaves as a non-negated verb does: it can be overtly negated, which forces its accusative complement, (7b), to appear in the genitive, (8).

(8) *Zachowanie Piotra nie niepokoi Marysi.*
behavior of-Peter NM worries Mary$_{gen}$
'Peter's behavior does not worry Mary.'

I conclude that *nie* in *nienawidzić* or *nie cierpieć* is a true NM, unlike in *niewolić* or *niepokoić*.[8]

On the basis of the properties of the NM presented above, as well as those discussed in Kupść and Przepiórkowski (1999), I treat verbal negation as a morphological phenomenon. Before proceeding to the analysis, a comment on the semantic impact of the NM should be made.

Unlike (1b) or (2b), none of the examples in (7) has a true 'negative' meaning. This fact, however, does not undermine the claim that the NM is part of the verbs such as *nienawidzić*. As observed in Brown (1999) (for Russian) and Przepiórkowski and Kupść (1999) (for Polish), morphological negation (the presence of the NM) triggers GoN but the NM may have no semantic impact. Przepiórkowski and Kupść (1999) discuss three environments in Polish where the NM does not have a semantic effect: negative yes/no questions, the temporal expression *dopóki nie* 'until', see (9), and the adverbial *omal nie* 'almost'.

(9) *Będziemy czekać dopóki jej nie znajdą.*
will-be-we wait until her$_{gen}$ NM find-they

[8]This conclusion is further supported by the fact that in XVth and XVIth century Polish, *nienawidzić* 'to hate' and *nie cierpieć* 'to detest' had non-negated counterparts (see Brückner (1957)).

‘We’ll be waiting until they find her.’ (≠ ‘…as long as they do not find her.’)

In (9), *nie* is a true NM since the NP *jej* occurs in the genitive rather in the usual accusative case. As indicated in the gloss, however, semantic negation of the verb does not result. I conclude that the NM in verbs such as *nienawidzić* behaves similarly and does not have a semantic impact either.

3 A Lexical Rule Approach

Apart from the irregularities enumerated in section 2, verbal negation in Polish is all in all a highly productive process, and negated and non-negated forms should be related in the lexicon. In this section, I discuss a potential HPSG encoding of this relationship, namely a lexical rule (LR) approach. An alternative (and more effective) analysis is proposed in section 4.

Throughout the paper, I follow Przepiórkowski and Kupść (1997) and use the boolean NEG attribute to signal whether the NM is present. The ‘+’ value indicates that the verb is preceded by the NM whereas ‘−’ signals the opposite. The attribute is present on verbs and deverbal derivatives (gerunds, participles, etc.), i.e., it is appropriate for the sort *verb* (and its subsorts). For the moment, let us concentrate on the formulation of the LR itself and leave aside morphological aspects of the analysis. We will come back to these issues in section 4.

3.1 Lexical Rule

An LR to relate non-negated and negated verbs is schematically given in (10).[9]

(10) $$\begin{bmatrix} \textit{word} \\ \text{PHON } \boxed{1} \\ \text{SS}|\text{LOC}|\text{CAT}|\text{HEAD} \begin{bmatrix} \textit{verb} \\ \text{NEG } - \end{bmatrix} \end{bmatrix} \mapsto \begin{bmatrix} \text{PHON } \langle\text{nie}\rangle \oplus \boxed{1} \\ \text{SS}|\text{LOC}|\text{CAT}|\text{HEAD}|\text{NEG } + \end{bmatrix}$$

The input of (10) (the left-hand side) is a non-negated ([NEG−]) verb. The output (the right-hand side) of the rule is the form of the input verb preceded by *nie* (encoded as token-identity of PHON values). Since the output verb is overtly negated, its NEG value is different as well, i.e., [NEG+]. The recursive application of (10), i.e., multiple *nie*-prefixation, is blocked by distinct NEG specifications of the input and output verbs.

[9]I adopt the convention that only those attributes’ values which are affected by the lexical rule are explicitly present on both sides of the rule.

This lexical rule provides correct forms for regularly negated verbs, e.g., (1). Since verbs with a built-in *nie*, such as *niepokoi* 'worries' in (7b), are regularly negated, cf. (8), the rule in (10) holds for these pairs as well. Irregular forms, however, cannot be obtained via this LR.

3.2 Problems

3.2.1 Exceptions

As shown in section 2, verbal negation in Polish is not fully productive. The rule in (10) accounts for regularly negated verbs but nothing prevents it from (incorrectly) applying also to exceptions.

First, the existential copula in (2a) is not overtly negated, i.e., [NEG −], and it may serve as the input for (10). Note, however, that the negated form in (2b) cannot be obtained via (10). The base form of the verb changes when the verb is negated and the PHON value of the input does not occur in the output.

Furthermore, verbs which cannot be negated, e.g., *proszę* '(I) ask' in (4a), or weak auxiliaries, cf. (5a), (6a), may be subject to (10). These verbs are not negated, i.e., marked as [NEG−] in the lexicon. Therefore, they may be used as the input of the lexical rule and their negated forms would be expected to exist, contrary to fact, see (4b), (5b), (6b).

Finally, lexically negated verbs such as *nie cierpieć* 'to hate/detest' in (7a) are not obtained via (10). This is less of a problem since they can be idiosyncratically marked [NEG+] in the lexicon. Such a specification would make them exempt from the lexical rule in (10) and only negated forms would be present in the lexicon.

3.2.2 A Solution

In order to maintain a LR approach, exceptional lexical items have to become 'invisible' for the lexical rule. One possible way to achieve this effect is to introduce a (rule-specific) attribute to mark irregular forms and modify the lexical rule slightly. This would prevent application of the LR to irregular verbs (cf. e.g., Koenig and Jurafsky (1994) and Riehemann (1997) for a discussion of the treatment of exceptions in LRs approaches). I briefly consider such a modification below.

Let us use the boolean NEG-LEX-RULE attribute to indicate these lexical items which are subject to the LR (marked as '+') or not ('−'). The lexical rule in (10) can be modified as follows:[10]

[10] The modification presented below was proposed by Jesse Tseng (p.c.) in the discussion of my formulation of this LR in the previous version of the paper.

(11) $$\begin{bmatrix} \textit{word} \\ \textsc{phon}\ \boxed{1} \\ \textsc{ss}|\textsc{loc}|\textsc{cat}|\textsc{head}\ \begin{bmatrix} \textit{verb} \\ \textsc{neg}\ - \end{bmatrix} \\ \textsc{neg-lex-rule}\ + \end{bmatrix} \mapsto \begin{bmatrix} \textsc{phon}\ \mathrm{f}_{nie}(\boxed{1}) \\ \textsc{ss}|\textsc{loc}|\textsc{cat}|\textsc{head}|\textsc{neg}\ + \end{bmatrix}$$

In this setup, verbs such as *nie cierpieć* in (7a) would be marked as [NEG-LEX-RULE −] in the lexicon, which makes them exempt from the LR in (11). They are positive exceptions to (11): these verbs have a negated form which is not obtained in a regular way. Also the verb *proszę* '(I) ask' in (4a) or weak auxiliaries in (5a) and (6a) would be marked as [NEG-LEX-RULE −]. This would correctly block application of (11), and since the verbs are also marked [NEG−], the NM will never be present.

In order to obtain negated forms of the existential *być* 'to be' in (2), the PHON value of the output in (10) is replaced, as common in LRs approaches, by a more complex function f_{nie} in (11). The value of this function is the concatenation of *nie* and the phonology of the input (as in (10)) unless the input verb is a form of the existential *być*. In the latter case, the prefix *nie* is attached to the verbal stem idiosyncratically specified by the function.

Note that the LR in (11) changes the NEG value of the input but it does not affect [NEG-LEX-RULE +] marking, i.e., the attribute's value is preserved in the output (see fn. 9). Note that if the NEG-LEX-RULE's value also changed in the output, such a specification would be redundant for regularly negated verbs. All non-negated ([NEG−]) forms of regularly negated verbs have to be [NEG-LEX-RULE +] to become subject to (11). If regularly negated forms ([NEG+]), obtained via (11), are additionally marked [NEG-LEX-RULE −], there would be two factors that prevent the recursive application of the LR: the morphosyntactic NEG attribute and the rule-specific NEG-LEX-RULE attribute. Changing only the NEG value in (11) avoids this redundancy and is sufficient to block the recursive application of the LR.

Although (11) does not have the deficiencies of (10), it is not unproblematic.

Once NEG-LEX-RULE is introduced, one has to specify non-negated verbs which are subject to (11), i.e., marked [NEG-LEX-RULE+]. Since verbs which can be regularly negated do not form a uniform class, there seems to be no easy way in general to identify such verbs. This means that, in fact, the value of NEG-LEX-RULE has to be individually specified on each verb. Therefore, the relevance and usefulness of the lexical rule becomes questionable.

An alternative solution, suggested by Jesse Tseng (p.c.), would be to mark exceptional verbs as [NEG-LEX-RULE−] whereas regular verbs would be [NEG−] but unspecified for the feature NEG-LEX-RULE. Regular verbs would satisfy the description of the input in (11) and negated forms would be obtained. Adopting standard monotonic resolution of attributes' values in HPSG, however, this leads to doubling lexical items for regularly negated verbs: each regular [NEG−] verb would be [NEG-LEX-RULE+] but it would also have a [NEG-LEX-RULE−] counterpart.

Another, more general problem with lexical rules as in (11), has been pointed out by one of the reviewers of this paper. Learnability considerations provide an objection to lexical rules which do not apply to certain listed exceptions. As argued in Fodor (1992), such exceptions are not learnable.

The issues considered above, as well as theoretical problems concerning the formal status of lexical rules in HPSG in general (see Meurers (1999)), discourage the use of a LR to Polish morphological negation.

4 Underspecification in the Lexicon

The analysis I propose in this section crucially relies on lexical underspecification. Attributes' values are resolved via lexical constraints rather than fixed in lexical entries as in the LR approach.

4.1 General Idea

As stated in section 3.1, I assume that verbs have the NEG attribute. Verbs which can be regularly negated, e.g., *lubi* 'likes' in (1), and also verbs like *niepokoi* 'worries' in (7b), are unspecified for NEG in the lexicon.[11] Hence, they can be either [NEG+] or [NEG−], i.e., negated or not. In section 4.2, I propose an analysis which accounts for the morphological spell-out of the NEG attribute.

Let us turn to exceptions. Verbs which cannot be negated, e.g., *proszę* '(I) ask' in (4a) or weak auxiliaries, (5a) and (6a), are lexically marked as [NEG−]. Therefore, the lack of corresponding negated forms is accounted for. Verbs such as *nie cierpieć* 'to hate' in (7a), are lexically specified as [NEG+]. This correctly predicts that they have only a negative form.

The existential copula *być* 'to be' can be negated but it has a suppletive negative form. I leave the verb unspecified for NEG in the lexicon. It is required, however, that in the present tense the NM is attached to the form of the verb 'have' rather than 'be'. A detailed analysis of *być* is given below in section 4.2.3.

In this approach, only exceptional forms are listed in the lexicon and idiosyncratically marked. No special marking is required for regularly negated forms: they are left unspecified, allowing for both values of NEG. The current solution also avoids redundant specification on verbs which can be regularly negated.

[11] An account along these lines has also been suggested in Borsley (1999).

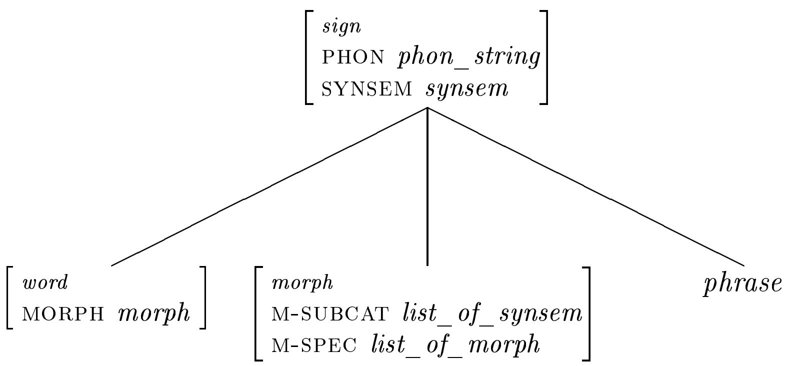
4.2 Towards A Morphosyntactic Analysis

So far, HPSG lacks a well-developed account of morphology. Several attempts have been made in recent literature: Riehemann (1997) (derivation), Kathol (1999), (inflection), Miller and Sag (1997), Abeillé *et al.* (1998), Monachesi (1999) (morphological cliticization), Koenig (1999), Reinhard (2000) (a general setup). In this paper I follow the architecture for morphology developed in Reinhard (2000) and adopted in Richter and Sailer (1999).

4.2.1 Signature

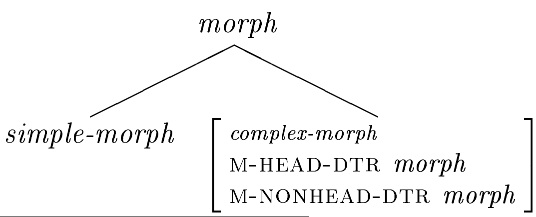
In order to account for morphosyntax of Polish negation, I follow Richter and Sailer (1999) in adopting a number of modifications to the standard HPSG signature:[12]

(12)



As (12) shows, there are three subsorts of *sign*: *phrase* (as in Pollard and Sag (1994)), *word* with the added MORPH attribute, and *morph*. The last sort is further split into *simple-morph* (for basic non-recursive morphological units such as inflectional or derivational affixes and stems) and *complex-morph* (for more complex morphological entities such as compounds and inflected or derived forms):

(13)



[12] Since phonology is not the main topic of this paper, the value of PHON is oversimplified here and represented as a *phon_string*. See Höhle (1999) for an elaborated architecture for phonology.

The HPSG lexicon can be defined as a constraint on a minimal non-recursive sort. In Pollard and Sag (1994), this sort is *word*. Any *word* licensed by the grammar must satisfy one of the lexical descriptions, i.e., lexical entries. In the extended signature proposed in (12)–(13), *word* is no longer a non-recursive minimal subsort of *sign* (see Höhle (1999)). I follow Richter and Sailer (1999) and assume that, in the present setup, the lexicon consists of descriptions of non-recursive *simple-morph*s, which in turn serve as word-formation units.

The precise formulation of morphological principles for Polish is far beyond the scope of this paper. In the remaining sections of this paper, however, I sketch out a morphological analysis of Polish *nie*-prefixation.

4.2.2 Regularly Negated Verbs

As stated in section 4.1, verbs that can be regularly negated are unspecified for NEG in the lexicon. This means that the NEG value is freely instantiated on the corresponding *simple-morph*. The lexical entry for *lubi* in (1), i.e., the verbal stem *lub-* is given in (14).

(14)
$$\begin{bmatrix} \textit{simple-morph} & \\ \text{PHON} & \langle \text{ lub } \rangle \\ \text{SYNSEM}|\text{LOC}|\text{CAT}|\text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{NEG} \ \ \textit{boolean} \end{bmatrix} \end{bmatrix}$$

Verbal inflection does not depend on the presence or absence of negation. Although inflection of the (non-negated) verb may be irregular, the form of the prefix *nie* never changes or influences the inflection of the verb. Thus, the NM is not part of the stem and is attached to an inflected verb,[13] as in the case of Romance (morphological) clitics, cf. Monachesi (1999) (Italian), Miller and Sag (1997), Abeillé *et al.* (1998) (French), and Richter and Sailer (1999) (Italian and French).

Like Richter and Sailer (1999), I use the syntax-morphology interface to encode the spell-out of the NM *nie* at the *word* level. The relevant constraint is given in (15).

(15) *word* →
$$\begin{bmatrix} \text{PHON} & \langle \# \rangle \oplus \langle \textit{ nie } \rangle \oplus \boxed{1} \oplus \langle \# \rangle \\ \text{MORPH} & \begin{bmatrix} \text{PHON} & \boxed{1} \\ \text{SYNSEM} & \boxed{2} \left[\text{LOC}|\text{CAT}|\text{HEAD}|\text{NEG} \ + \right] \end{bmatrix} \\ \text{SYNSEM} & \boxed{2} \end{bmatrix} \vee$$

[13] In the case of regularly negated verbs such as *niepokoić* 'to worry' in (7b), *nie-* is not the negative marker (NM) and I treat it as part of the verbal stem rather than a prefix.

$$\begin{bmatrix} \textsc{phon}\ \langle\#\rangle \oplus \boxed{3} \oplus \langle\#\rangle \\ \textsc{morph}\ \begin{bmatrix} \textsc{phon}\ \boxed{3} \\ \textsc{synsem}\ \boxed{4} \big[\ \textsc{loc}|\textsc{cat}|\textsc{head}\ \neg[\textsc{neg}+]\big] \end{bmatrix} \\ \textsc{synsem}\ \boxed{4} \end{bmatrix}$$

The principle in (15) relates *morph*s to full-fledged syntactic *word*s.[14] The first disjunct of the consequent accounts for the morphological spell-out of [NEG+] as the prefix *nie* (the NM precedes the phonology of the verb). The second disjunct applies to those *word*s which do not have a [NEG+] specification, i.e., to [NEG−] verbs but also to prepositions, adjectives, adverbs or nouns which do not have the NEG attribute at all.

Remember that the NM is only inserted at the syntax-morphology interface, thus [NEG+] verbs are not stored with the NM in the lexicon. Therefore, multiple *nie*-prefixation does not result. The principle indicates also where phonological word boundaries ('#') are inserted. Thus, a negated verb is treated as a morphological unit and the NM is invisible to the syntax.

Note also that, according to (the first disjunct of) (15), the NM does not contribute to the semantics of the verb: the *word* and its MORPH value have token-identical SYNSEM values. This is a desirable effect since, as argued in Przepiórkowski and Kupść (1999), the morphosemantic impact of the Polish NM is not resolved at the *word* level.

4.2.3 Exceptions

Verbs which cannot be morphologically negated are specified as [NEG−] in the lexicon:

(16)
$$\begin{bmatrix} \textit{simple-morph} \\ \textsc{phon}\ \langle\text{prosz}\rangle \\ \textsc{synsem}|\textsc{loc}|\textsc{cat}|\textsc{head}\ \begin{bmatrix} \textit{verb} \\ \textsc{neg}\ - \end{bmatrix} \end{bmatrix}$$

The first disjunct of the constraint in (15) does not apply to (16), correctly blocking *nie*-prefixation of this verb (the constraint in (15) is still satisfied via the second disjunct). Weak auxiliaries have an analogous lexical specification; see (Borsley, 1999, p.42) for further details.

I assume that verbs such as *nie cierpię* '(I) hate' in (7a) always occur with the NM and are lexically specified as [NEG+]. *Nie* is not part of their stem and it is added to inflected forms via the general constraint proposed in (15). The only difference is that, unlike for regularly negated verbs, the

[14] I assume that MORPH's values in (15) are *morph*s satisfying principles responsible for inflection. However, I do not provide such principles here.

stem of *nie cierpieć* 'to hate', i.e., *cierp-* is always (and only) [NEG+], cf. (17).[15]

$$(17)\quad \begin{bmatrix} \textit{simple-morph} \\ \text{PHON}\ \langle \text{cierp} \rangle \\ \text{SYNSEM}|\text{LOC}|\text{CAT}|\text{HEAD}\ \begin{bmatrix} \textit{verb} \\ \text{NEG}\ + \end{bmatrix} \end{bmatrix}$$

Finally, we have to account for negation of the existential copula *być* 'to be/exist'. Inflection of this verb is irregular and all stem forms have to be listed in the lexicon. A partial description of its stem forms for different tenses is given in (18).

$$(18)\quad \begin{bmatrix} \textit{simple-morph} \\ \text{SYNSEM}|\text{LOC}\ \begin{bmatrix} \text{CAT}|\text{HEAD}\ \textit{verb} \\ \text{CONT}\ \textit{exist-be} \end{bmatrix} \end{bmatrix} \rightarrow$$

$$\begin{bmatrix} \text{PHON}\ \langle \text{są} \rangle \\ \text{SYNSEM}|\text{LOC}|\text{CAT}|\text{HEAD}\ \begin{bmatrix} \text{TENSE}\ \textit{pres} \\ \text{NEG}\ - \end{bmatrix} \end{bmatrix} \vee \ldots$$

$$\begin{bmatrix} \text{PHON}\ \langle \text{był} \rangle \\ \text{SYNSEM}|\text{LOC}|\text{CAT}|\text{HEAD}|\text{TENSE}\ \textit{past} \end{bmatrix} \vee \ldots$$

$$\begin{bmatrix} \text{PHON}\ \langle \text{będz} \rangle \\ \text{SYNSEM}|\text{LOC}|\text{CAT}|\text{HEAD}|\text{TENSE}\ \textit{fut} \end{bmatrix} \vee \ldots$$

This verb can be negated and, apart from the present tense stems, the NEG value is unspecified in (18). Since the semantic impact of the NM is not resolved at the lexical level, the CONT value of the antecedent in (18) is appropriate for both negated and non-negated forms. In the present tense the NM is added to a form of the verb *mieć* 'to have' rather than 'be'. The lexical specification in (19) (which is one of the (unmentioned) disjuncts in (18)) ensures that the negated verb in the present tense gets the appropriate form.

$$(19)\quad \begin{bmatrix} \textit{simple-morph} \\ \text{PHON}\ \langle\ \text{ma}\ \rangle \\ \text{SYNSEM}|\text{LOC}\ \begin{bmatrix} \text{CAT}|\text{HEAD}\ \begin{bmatrix} \textit{verb} \\ \text{NEG}\ + \\ \text{TENSE}\ \textit{pres} \end{bmatrix} \\ \text{CONT}\ \textit{exist-be} \end{bmatrix} \end{bmatrix}$$

I additionally assume that all negated forms of *być* have no syntactic subject, i.e., [SUBJ $\langle\rangle$] (cf. (20)).

[15]The regularly negated *cierpieć* 'to suffer' mentioned in fn. 6 has a different meaning and will have a separate lexical entry with the NEG value left unspecified.

(20) $\begin{bmatrix} \textit{simple-morph} \\ \textsc{synsem}|\textsc{loc}|\textsc{cat} \begin{bmatrix} \textsc{head}|\textsc{neg} \ + \\ \textsc{cont} \ \textit{exist-be} \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \textsc{synsem}|\textsc{loc}|\textsc{cat}|\textsc{subj} \ \langle\rangle \end{bmatrix}$

Adopting (20), the third person neuter form of the verb (see (2b) and (3)) follows from general principles of subject-verb agreement in Polish proposed in Czuba and Przepiórkowski (1995).

5 Conclusions

In this paper I provided a morphosyntactic account of Polish verbal negation. I discussed two possible ways of formalizing the analysis in the framework of HPSG. First, I considered a more 'standard' approach based on a lexical rule. On such an analysis, however, exceptions cannot be handled satisfactorily. Then I provided an alternative account based on underspecification in the lexicon. The advantage of this solution is that only irregular forms have to be idiosyncratically marked whereas no specific marking is required for regularly negated verbs. This also allows us to avoid the redundancy of the lexical rule approach. Moreover, the constraint-based account sidesteps theoretical problems concerning the formal status of lexical rules in HPSG.

Finally, I proposed a setup to deal with the morphosyntactic aspects of verbal negation. On this approach, the NM is inserted at the syntax-morphology interface and is not treated as part of the morphological base. This allows us to uniformly capture the spell-out of the NM both in regularly and irregularly negated verbs.

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