TWO REPRESENTATIONS OF NEGATION IN LFG: EVIDENCE FROM POLISH

Adam Przepiórkowski and Agnieszka Patejuk
Institute of Computer Science, Polish Academy of Sciences

Abstract

The aim of this paper is to propose f-structure representations of two different types of negation: constituent negation and eventuality negation. In particular, the paper substantiates a suggestion recently made within the PAR-GRAM community that two binary-valued attributes are needed. We also show that, while the distinction between constituent and eventuality negation is often treated as epiphenomenal in current linguistics, boiling down to scope, Polish provides evidence for the morphosyntactic status of this distinction. Finally, we show that both types of negation may be used metalinguistically, thus supporting Horn's (1985, 1989) analysis of metalinguistic negation as a pragmatic phenomenon.

1 Introduction

There is no standard representation of negation in LFG f-structures; the issue is not mentioned in the two most popular LFG textbooks/reference books, namely Bresnan 2001 and Dalrymple 2001 (or in October 2014 versions of new editions of these monographs). Recently, this topic has raised some interest within the PAR-GRAM community (`https://pargram.b.uib.no/`), which aims at the development and standardisation of XLE (Crouch et al. 2011) implementations of LFG grammars for various languages. There, two solutions have been proposed: to represent negation as an appropriate element of the ADJ(UNCT) feature, or to introduce a new binary feature, NEG. The following two simplified f-structures illustrate these two possibilities for the sentence "John doesn't like Mary":

(1)
$$
\begin{bmatrix}
\text{PRED} & \text{`LIKE}\langle\boxed{1},\boxed{2}\rangle\text{'} \\
\text{SUBJ} & \boxed{1}\begin{bmatrix}\text{PRED} & \text{`JOHN'}\end{bmatrix} \\
\text{OBJ} & \boxed{2}\begin{bmatrix}\text{PRED} & \text{`MARY'}\end{bmatrix} \\
\text{ADJ} & \left\{\begin{bmatrix}\text{PRED} & \text{`NOT'} \\ \text{ADJ-TYPE} & \text{NEG}\end{bmatrix}\right\}
\end{bmatrix}
$$

(2)
$$
\begin{bmatrix}
\text{PRED} & \text{`LIKE}\langle\boxed{1},\boxed{2}\rangle\text{'} \\
\text{SUBJ} & \boxed{1}\begin{bmatrix}\text{PRED} & \text{`JOHN'}\end{bmatrix} \\
\text{OBJ} & \boxed{2}\begin{bmatrix}\text{PRED} & \text{`MARY'}\end{bmatrix} \\
\text{NEG} & +
\end{bmatrix}
$$

Within a particular implementation, usually one of these representations is assumed: in the majority of cases this is the former representation, treating occurrences of negation as adjuncts, because it makes it easy to represent multiple negation (via multiple negative elements of the ADJ set), as in "John doesn't not like Mary". A recent exemplar of this approach is the analysis of Hungarian negation in Laczkó 2014, where all types of negation, including constituent negation and verbal negation, are treated this way. It has also been suggested (Laczkó 2015) that perhaps both kinds of representation are needed in the analysis of Hungarian and, in passing, that perhaps two binary-valued attributes would suffice for this purpose: NEG (with values '+' and '−') and POL (with values such as 'negative' and 'affirmative'). The current proposal may be seen as fleshing out and further substantiating this suggestion.

2   Eventuality negation

For reasons given below, instead of the usual terms *predicate negation* or *sentential negation*, we adopt here the term *eventuality negation* (EN), whose denotation is a little broader than that of these more common terms. In Polish, the usual surface realisation of EN is as the verbal prefix *nie*, e.g.:[1]

(3) Janek   nie lubi Marii.
     Janek.NOM NEG likes Maria.GEN
     'Janek doesn't like Maria.'

(4) Nikt   nie lubi nikogo.
     nobody.NW.NOM NEG likes nobody.NW.GEN
     'Nobody likes anybody.'

Multiple arguments for the bound morpheme status of *nie* – contradicting Polish orthographic rules that treat it as a separate word delimited by spaces – are given in Kupść and Przepiórkowski 2002 and they involve joint prosody, impact on valence frames, paradigm gaps, no scope over coordination (cf. King 1995 for similar considerations in the context of Russian) and the strong adjacency requirement holding between *nie* and the following verb. In fact, Polish orthography rules are a little inconsistent here (some (de)verbal forms are written together with *nie*), they are unstable (the rules about writing *nie* with participles changed a few years ago) and they differ from the – more reasonable, in our opinion – orthography rules for Czech, another West Slavic language, where the grammatical facts discussed below are similar (with the exception of the Genitive of Negation, now extinct in this language), but the Czech negative marker *ne* is consistently written together with the following verbal form.

---

[1] An attempt is made to follow Leipzig Glossing Rules (`https://www.eva.mpg.de/lingua/resources/glossing-rules.php`) in this paper. Additionally, NW stands for an n-word (see below).

Eventuality negation displays a number of grammatical characteristics, two of which are illustrated by the two sentences above. First of all, as seen in (3), EN triggers the Genitive of Negation (GoN), a phenomenon where a normally accusative argument of a verb occurs in the genitive case when this verb (or a higher verb within an appropriate domain) is negated – see Patejuk and Przepiórkowski 2014a and references therein. Second, as may be seen in (4), Polish is a Negative Concord (NC) language, where n-words such as *nikt* 'nobody.NOM' and *nikogo* 'nobody.ACC/GEN' are licensed by EN – see the rich HPSG literature on Polish NC, including Przepiórkowski and Kupść 1999 and Richter and Sailer 2004, and references therein.

While it is usually only the (pre)verbal negation that is discussed in the context of Negative Concord, there are two other kinds of negative environments that license n-words and, hence, should be included within the denotation of the term *eventuality negation*. One concerns negated adjectives – adjectives such as *niepodobny* 'unsimilar, unlike' (paired with *podobny* 'similar, alike'), may license n-words, as the following attested[2] example – involving the n-word *żadnego* 'none.GEN' – illustrates:

(5) Jest to   absolutnie nowy minerał niepodobny do żadnego z dotychczas
    is   this.NOM absolutely new   mineral NEG:similar to none.NW of so-far

    nam   znanych.
    us.DAT known

    'This is an absolutely new mineral, not similar to any known to us so far.'

Similarly, de-adjectival negated adverbs may also license n-words:[3]

(6) Smakuje niepodobnie do żadnego innego zboża.
    tastes   NEG:similarly to none.NW other   grain

    'It tastes unlike any other grain.'

The other non-verbal environment licensing n-words is the preposition *bez* 'without', as in (7).[4]

(7) Wygram   bez żadnych   problemów.
    win.1.SG.FUT without none.NW.GEN problems.GEN

    'I will win without any problems.'

This n-word-licensing environment is discussed in Przepiórkowski and Kupść 1999, where it is suggested that *bez* may express a propositional content meaning roughly 'to not involve'. We adopt this view here and conclude that the discussed environments justify the broad term *eventuality negation*, alluding to the notion of *eventuality* (Bach 1986), which encompasses both *events* and *states* (the latter expressed

---

[2] `http://www.geekweek.pl/aktualnosci/19103/mineral-niepodobny-do-niczego-co-znamy` (accessed on 25 September 2015). Attested examples are often cited here in a simplified form.

[3] `http://mycuisine.blox.pl/2012/02/Golabki-wegetarianskie-z-amarantusem.html` (accessed on 25 September 2015).

[4] `http://sportowefakty.wp.pl/boks/466592/tomasz-adamek-jesli-bede-szybki-to-wygram-bez-zadnych-problemow` (accessed on 25 September 2015).

not only by verbs, but also by adjectival elements), as opposed to the more common terms *predicate negation*, *sentential negation* or *verbal negation*.[5]

3 Constituent negation

Polish *constituent negation* (CN), while expressed by the same form *nie*, displays markedly different properties than eventuality negation. First, it is not a bound morpheme: it may be separated from the constituent it negates, it may scope over coordination, etc. Second, it does not display the grammatical properties discussed above:

(8) Nie Janek   lubi Marię   / *Marii   / *nikogo   (lecz
    NEG Janek.NOM likes Maria.ACC   Maria.GEN nobody.NW.ACC/GEN but
    Tomek).
    Tomek.NOM
    'It's not Janek who likes Maria (but Tomek).'

As (8) shows, CN does not trigger the Genitive of Negation (*Marię* must occur in the accusative) and it does not license n-words. This is true regardless of the category of the negated constituent; for example, the following attested[6] sentence shows that the otherwise obligatory local GoN does not occur when the form *nie* preceding the verb is interpreted as CN (the clear negative judgement ours):

(9) Ma skakać, a   nie pisać   wiersze / *wierszy.
    has jump.INF and NEG write.INF poems.ACC/*GEN

    'He is to jump, and not to write poems.'   (of a sportsman)

Similarly, CN does not license n-words even if they occur within the negated constituent, as the following example, constructed on the basis of (10), illustrates:

(10) *Ma skakać, a   nie pisać   żadne   wiersze.
     has jump.INF and NEG write.INF none.NW poems.

     'He is to jump, and not to any write poems.'   (intended)

4 Two f-structure representations of negation

The contrast between (9) above and the attested[7] (slightly modified, with the clear negative judgement ours) sentence (11) below, involving EN, shows that the two kinds of negation should be distinguished at f-structure, if the analysis of case assignment is to be based on f-structure representations (as in Patejuk and Przepiór-kowski 2014a):

---

[5]See also Przepiórkowski 1999 for further defence of the eventuality-level approach to so-called sentential negation.

[6]`http://www.dobramama.pl/pokaz/458957/Piotr_zyla/1/old` (accessed on 25 September 2015).

[7]`http://biuroliterackie.pl/ksiazki/male-cienie-wielkich-czarnoksieznikow-2/opinie/` (accessed on 25 September 2015).

(11) Poetyckim   marzeniem   Karpowicza   było: nie   pisać
poetic.INST   dream.INST   Karpowicz.GEN   was   NEG   write.INF
wierszy / *wiersze.
poems.GEN/*ACC
'The poetic dream of Karpowicz was not to write poems.'

In (11), the nominal predicative phrase occurs preverbally in the instrumental case, and the postverbal subject of the predication is a negated infinitival clause. Just as in (9), the negative marker *nie* directly precedes an infinitival verb, and yet the normally accusative object of this verb must occur in the genitive here.

N-words behave in a similar way, i.e. they are licensed by EN and not by CN, as illustrated by the contrast between (10) above and (12) below.

(12) Poetyckim marzeniem Karpowicza   było: nie pisać   żadnych wierszy.
poetic.INST dream.INST Karpowicz.GEN was   NEG write.INF none.NW poems.
'The poetic dream of Karpowicz was not to write any poems.'

Again, Negative Concord seems to be best handled at the level of f-structure (see the following section), so the two kinds of negation should have different f-structure representations.

The simplest solution consistent with the above facts would consist in positing a single attribute with three possible values corresponding to: no negation, EN and CN. However, CN and EN may co-occur at the same constituent (and, hence, the same f-structure), as the following attested[8] example shows:

(13) Kościół   katolicki   nie nie potrafi, ale nie chce.
church.NOM catholic.NOM NEG NEG can   but NEG want
'It's not that the Catholic Church cannot, but rather that it doesn't want to.'

For this reason we propose to represent negation via two binary attributes: ENEG (for eventuality negation) and CNEG (for constituent negation). Adopting this assumption, the first part of (13), *Kościół katolicki nie nie potrafi* 'It's not that the Catholic Church cannot', will receive the following f-structure:[9]

(14)
$$\begin{bmatrix} \text{PRED} & \text{'CAN}\langle\boxed{1},\boxed{2}\rangle\text{'} \\ \text{SUBJ} & \boxed{1}\begin{bmatrix} \text{PRED} & \text{'CC'} \end{bmatrix} \\ \text{XCOMP} & \boxed{2} \\ \text{ENEG} & + \\ \text{CNEG} & + \end{bmatrix}$$

Note that just as we are not aware of the possibility of two eventuality negations occurring at the level of the same predicate, also stacking constituent negation does not seem possible, as the following putative exchange shows:

---

[8] In the National Corpus of Polish (`http://nkjp.pl/`; Przepiórkowski et al. 2011, 2012); many similar examples may be found in the Internet, e.g. `http://forum.gazeta.pl/forum/w,46,77797868,77846609,nie_nie_potrafi_a_nie_chce_bo_nie_ma_sily_.html?wv.x=1` (accessed on 25 September 2015).

[9] This assumes the ellipsis of XCOMP.

(15) A. Kto   lubi Marię?
        who.NOM likes Maria.ACC
        'Who likes Mary?'

B. Marię   lubi Janek.
      Maria.ACC likes Janek.NOM
      'Janek likes Maria.'

C. Marię   lubi nie Janek,   lecz Tomek.
      Maria.ACC likes NEG Janek.NOM but Tomek.NOM
      'It's not Janek who likes Mary, but Tomek.'

B. *Marię   lubi nie nie Janek,   lecz właśnie   on –
      Maria.ACC likes NEG NEG Janek.NOM but FOCUS.PARTICLE him
      Janek!
      Janek.NOM
      'It's not that it's not Janek who likes Mary – he does!'   (intended)

The reason the final English translation is grammatical is that negation operates here at two different levels: one negates the whole sentence *that it's…* and the other negates the NP *Janek*. Obviously, this is also marginally possible in Polish, again, with two negation markers *nie* applying to two different constituents:

(16) Nie: Marię   lubi nie Janek;   Marię   lubi   właśnie
     NEG Maria.ACC likes NEG Janek.NOM Maria.ACC likes FOCUS.PARTICLE
     on!
     he.NOM
     'It's not that it's not Janek who likes Mary – he does like Mary!'

Hence, representing negation via the two binary attributes, ENEG and CNEG, rather than via an arbitrary number of adjuncts marked as NEG, as in (1), does not only make the difference between eventuality and constituent negation explicit, but also leads to more restrained analyses, where up to one negation of either type is possible for each predicate.

In the context of English, the distinction between constituent negation and sentential (here: eventuality) negation was discussed and supported with various tests in Klima 1964, as in the following minimal pairs (here on the basis of Penka 2015: 304 and Zeijlstra 2015: 275):

(17) **sentential negation:**

John didn't find a job,
a.   …did he / *didn't he?
b.   …and neither did Mary / *and so did Mary.
c.   …and Mary didn't, either / *and Mary didn't, too.
d.   …not even a part-time one / *even a part-time one.

(18) **constituent negation:**

John found a job not far away,
a. . . . didn't he / *did he?
b. . . . and so did Mary / *and neither did Mary.
c. . . . and Mary did, too / *and Mary did(n't), either.
d. . . . even a well-paid one / *not even a well-paid one.

However, since then, the distinction has fallen into disrepute and it has been reanalysed as a simple matter of scope of the negative marker (Payne 1985, Acquaviva 1997; see also Zeijlstra 2015: 275–276 and Penka 2015: 304–305).

This position does not seem to be justified in the case of Polish, where a number of diagnostics distinguish constituent negation from eventuality negation, even when both scope over the predicate. Two such differences, concerning Genitive of Negation and Negative Concord, are illustrated with the minimal pairs (9) vs. (11) and (10) vs. (12). Another difference is the possibility to insert additional material between *nie* and the negated element: as noted in Kupść and Przepiórkowski 2002, it is allowed in CN, but not in EN:

(19) Ma skakać, a   nie, kurwa, pisać   wiersze!
has jump.INF and NEG whore write.INF poems.ACC/*GEN
'He is to jump, and not to write poems, for fuck's sake!'   (of a sportsman)

(20) *Poetyckim marzeniem Karpowicza   było: nie, kurwa, pisać   wierszy!
poetic.INST dream.INST Karpowicz.GEN was NEG whore write.INF poems.
'The poetic dream of Karpowicz was not to write poems, for fuck's sake!'

(intended)

Also other differences discussed in Kupść and Przepiórkowski 2002 apply here, including different prosodic contours. Such differences between the two kinds of negation in Polish lead Kupść and Przepiórkowski (2002) to the conclusion that the negative marker *nie* in eventuality negation should be treated as a verbal prefix. There is nothing strange about this – the World Atlas of Language Structures (Dryer 2013) reports some 400 languages with negative affixes.[10] Also this is no reason to try to assimilate Polish EN with lexical negation, as expressed in English by the prefixes *un-* (e.g. *unhappy*) and *in-* (e.g. *incontinent*) – such English prefixes have a markedly different semantics than the usual sentential (or eventuality) negation: they express contrary rather than contradictory negation (Horn 1989: §5.1).

In summary, we conclude that the dichotomy discussed here cannot easily be reduced to semantic scope, nor can eventuality negation be equated with so-called lexical negation, and maintain that the two kinds of negation discussed here be represented via two binary-valued attributes, say, ENEG and CNEG.

---

[10]Strangely enough, while it cites other West Slavic languages (Czech and Sorbian) as having a negative affix, it lists Polish as a negative marker language.

5 A note on Negative Concord

An analysis of case assignment to objects in Polish – including a detailed analysis of the Genitive of Negation – which is compatible with the representation of negation proposed above is presented in Patejuk and Przepiórkowski 2014a, where the attribute NEG is used instead of the current ENEG. Here, we sketch an analysis of Polish Negative Concord. Both analyses are implemented as part of the Polish XLE grammar POLFIE (`http://zil.ipipan.waw.pl/LFG`; Patejuk and Przepiórkowski 2012b,a, 2014b, 2015).

Consider (4), repeated below for convenience, and its intended f-structure in (21).

(4) Nikt   nie lubi nikogo.
     nobody.NW.NOM NEG likes nobody.NW.GEN
     'Nobody likes anybody.'

(21)
$$\begin{bmatrix} \text{PRED} & \text{'LIKE}\langle \boxed{1}, \boxed{2} \rangle\text{'} \\ \text{SUBJ} & \boxed{1} \begin{bmatrix} \text{PRED} & \text{'NOBODY'} \\ \text{CASE} & \text{NOM} \end{bmatrix} \\ \text{OBJ} & \boxed{2} \begin{bmatrix} \text{PRED} & \text{'NOBODY'} \\ \text{CASE} & \text{GEN} \end{bmatrix} \\ \text{ENEG} & + \end{bmatrix}$$

The following (relevant parts of) two lexical entries are assumed for the negative marker *nie*, where both features ENEG and CNEG are assumed to be instantiated (may be assigned a value only once):

(22) *nie*   ENEG $(\uparrow \text{ ENEG}) = +$

(23) *nie*   CNEG $(\uparrow \text{ CNEG}) = +$

Two different preterminal categories ENEG and CNEG are needed, as the two kinds of negative marker have different distribution and occur in different c-structure rules; simplified examples of such rules are given below:

(24) IP $\rightarrow$ (CNEG) (ENEG) I

(25) XP $\rightarrow$ CNEG XP

We adopt here the convention that nonterminals on the right-hand side which are not explicitly annotated with functional equations are implicitly annotated with the head equation $\uparrow=\downarrow$; in effect, all nonterminals on the right-hand sides of the above rules are co-heads. The first of these rules says that a (widely understood) verbal category may be preceded by constituent negation and by eventuality negation. If both occur, as in (13) above, the f-structure corresponding to IP (and to I) will include the + values of both CNEG and ENEG. If *nie* occurs only once, as in (4), it may be interpreted as either constituent negation or eventuality negation, so ambiguity arises. In the actual implementation, this ambiguity is handled by adding

OT marks[11] to the effect that eventuality interpretation is preferred. Conversely, the second of the two rules says that CNEG – and only CNEG – may precede a number of maximal projections – XP stands for NP, PP, AP, AdvP, etc. Due to the fact that CNEG is an instantiated feature, this rule may be used only once per maximal projection.

In case of n-words such as *nikt* 'nobody.NOM' and *nikogo* 'nobody.ACC/GEN', the following lexical entries are assumed:[12]

(26)   *nikt*   N $(\uparrow$ CASE$) =$ NOM
$$((\text{XCOMP}^* \text{ GF}^+ \ \uparrow) \text{ ENEG}) =_c +$$

(27)   *nikogo*   N $(\uparrow$ CASE$) \in \{$ACC, GEN$\}$
$$((\text{XCOMP}^* \text{ GF}^+ \ \uparrow) \text{ ENEG}) =_c +$$

The following (here simplified) definition of GF is assumed here; the complete definition also includes various subtypes of OBL and OBJ, but – crucially – it does not include COMP or XCOMP:

(28)   GF $\equiv$ {SUBJ|OBL|OBJ|ADJ $\in$}

In case of example (4) and its f-structure (21), the functional uncertainty XCOMP* GF$^+$ matches SUBJ (for *nikt*) and OBJ (for *nikogo*). The complexity of the inside-out functional uncertainty present in these lexical entries arises from examples such as the following, where the path specification matches XCOMP OBJ ADJ $\in$.

(29)   Karpowicz   nie chciał pisać   żadnych wierszy.
       Karowicz.NOM NEG wanted write.INF none.NW poems.GEN
       'Karpowicz didn't want to write any poems.'

See Przepiórkowski and Kupść 1997 for a further discussion of locality constraints on the Negative Concord in Polish.

6   A note on metalinguistic negation

Apart from sentential, constituent and lexical negation (the last one not analysed here), there is another type of negation widely recognised in the linguistic literature, namely, metalinguistic negation (Horn 1985, 1989), illustrated here with the following examples from Horn 1989: ch.6:

(30)   The king of France is not bald—(because) there is no king of France.

(31)   <u>Some</u> men aren't chauvinists—<u>all</u> men are chauvinists.

(32)   He didn't call the [pólis], he called the [polís].

---

[11]See the XLE documentation at `http://www2.parc.com/isl/groups/nltt/xle/doc/xle.html#Local_Optimality_Marks`.

[12]In the current XLE implementation, which uses so-called sublexical rules (Krasnowska-Kieraś and Patejuk 2015), lexical entries define lexemes rather than particular forms, so (26)–(27) are conflated into a single lexical entry in the implementation, with case information coming from the morphological component.

(33) I didn't manage to trap two mon<u>geese</u>—I managed to trap two mon<u>gooses</u>.

(34) We didn't have intercourse—we fucked.

(35) Ben Ward is not a black Police Commissioner but a Police Commissioner who is black.

As these examples show, the impact of metalinguistic negation is not the truth-conditional contradiction of the state of affairs expressed by the affirmative counterpart, but rather raising objection to some aspect of an utterance – in fact, any aspect: classical presupposition, scalar implicature, pronunciation, morphology, register or general connotation.

Horn (1985, 1989) notes that, across languages, such metalinguistic uses of negation do not require the use of a negative morpheme different from that used for ordinary "descriptive" (to use Horn's term) negation. Moreover, as exemplified above, typical uses of such metalinguistic negation are not truth-conditional. For this reason, Horn analyses the descriptive vs. metalinguistic ambiguity of negative markers as pragmatic. Nevertheless, there is an aspect of metalinguistic negation that resembles constituent negation: just as CN does not license n-words in Polish, metalinguistic negation does not license Negative Polarity Items (NPIs) in English – and also does not forbid Positive Polarity Items (PPIs) (Karttunen and Peters 1979: 46–47, Horn 1989: 368):

(36) Chris didn't <u>manage</u> to solve {some/*any} problems—he solved them easily.

(37) Bill hasn't already forgotten that today is Friday, because today is Thursday.

In (36), where what is negated is the implicature introduced by *manage*, namely, that the activity expressed by the following infinitival phrase is difficult, the NPI *any* is not allowed, and instead *some* is used. This should be contrasted with the ordinary negation in *Chris didn't solve any problems*, where *any* is allowed (and *some* would result in wide scope over negation). Similarly, in (37), where what is negated is the implicature concerning the factivity of the sentential complement of *forgotten*, the PPI *already* is allowed, although it is normally forbidden in negated sentences (and *yet* should be used instead), e.g. *Bill hasn't forgotten about that yet/*already*.

Given this similarity between Polish CN, which does not license n-words, and English metalinguistic negation, which does not count as negation for the purpose of NPI/PPI-licensing, it is tempting to say that perhaps Polish constituent negation is a subtype of metalinguistic negation. However, the following (constructed but not controversial) data force us to reject this attempt at applying Occam's razor:

(38) a. Nie odwiedziłem Marysi,   tylko Anię.
          NEG visited.1.SG.M Marysia.GEN only Ania.ACC
          'I didn't visit Marysia, but Ania.'

      b. Odwiedziłem nie Marysię,   tylko Anię.
          visited.1.SG.M NEG Marysia.ACC only Ania.ACC
          'I visited not Marysia, but Ania.'

(39) a. Nie zwiedzałem żadnego Tübingen, tylko Tybingę.
   NEG sightsee1.SG.M none.NW.GEN Tübingen.GEN only Tybinga.ACC
   'I wasn't sightseeing Tübingen, but Tybinga.'

   b. Zwiedzałem nie jakieś Tübingen, tylko Tybingę.
   sightsee1.SG.M NEG some.ACC Tübingen.ACC only Tybinga.ACC
   'I was sightseeing not Tübingen, but Tybinga.'

(40) a. Ta kawa nie była gorąca, tylko wrząca!
   this.NOM coffee.NOM NEG was hot.NOM only scalding.NOM
   'This coffee wasn't hot – it was scalding hot!'

   b. Ta kawa była nie gorąca, tylko wrząca!
   this.NOM coffee.NOM was NEG hot.NOM only scalding.NOM
   'This coffee was not hot but scalding hot!'

The first of these pairs shows that both EN (in (38a)) and CN (in (38b)) may express the usual truth-conditional meaning. The other two pairs show, on the other hand, that both EN and CN may be used metalinguistically: what is objected in (39) is the use of the international name *Tübingen* instead of its Polish version *Tybinga*, and what is negated in (40) is the scalar implicature (that the coffee was cooler than 'hot') – a typical use of metalinguistic negation.

Note in particular that the metalinguistic negation in (39a) licenses the n-word *żadnego*. This may seem surprising at first, given NPIs and PPIs' indifference to metalinguistic negation, but in fact this only confirms the observation that NPI/PPI-licensing on one hand and Negative Concord on the other operate at different linguistic levels: in NC, *licensing is not merely a question of semantic compatibility with a certain context [as it is in the case of NPI/PPI-licensing], but rather, perhaps primarily, a question of syntax* (Giannakidou 2011: 1684). In other words, metalinguistic negation cancels the usual impact of negation on NPI/PPI-licensing at the pragmatic level, as this level is arguably relevant to NPI/PPI-licensing (see e.g. Giannakidou 2011 and references therein), but it cannot cancel the impact of negation on Polish Negative Concord, as NC is a phenomenon at the level of morphosyntax, syntax and semantics, but not pragmatics. In any case, whether this intuition is valid or not, we may safely conclude on the basis of examples such as (38)–(40) that the distinction between constituent and eventuality negation in Polish is orthogonal to the possibility of using either of them metalinguistically. Since metalinguistic negation is a pragmatic phenomenon (Horn 1985, 1989), we assume that it is not explicitly represented within f-structures, but rather that positive values of f-structure attributes ENEG and CNEG may be interpreted as metalinguistic negation at more pragmatic levels of representation.

7 Conclusion

Citing Polish facts of the kind apparently not discussed in the LFG literature so far, we have shown that two different f-structure representations are needed to success-

fully handle the different behaviour of eventuality negation and constituent negation. We have also argued that these two kinds of negation may both be used metalinguistically. The two representations have been put to test in a comprehensive implemented grammar of Polish, which also includes an exhaustive treatment of case assignment and Negative Concord.

References

Acquaviva, Paolo. 1997. *The Logical Form of Negation: A Study of Operator-Variable Structures in Syntax*. New York: Garland.

Bach, Emmon. 1986. The Algebra of Events. *Linguistics and Philosophy* 9, 5–16.

Bresnan, Joan. 2001. *Lexical-Functional Syntax*. Blackwell Textbooks in Linguistics, Malden, MA: Blackwell.

Butt, Miriam and King, Tracy Holloway (eds.). 2014. *The Proceedings of the LFG'14 Conference*, Stanford, CA, CSLI Publications.

Crouch, Dick, Dalrymple, Mary, Kaplan, Ron, King, Tracy, Maxwell, John and Newman, Paula. 2011. XLE Documentation. `http://www2.parc.com/isl/groups/nltt/xle/doc/xle_toc.html`.

Dalrymple, Mary. 2001. *Lexical Functional Grammar*. San Diego, CA: Academic Press.

Dryer, Matthew S. 2013. Negative Morphemes. In Matthew S. Dryer and Martin Haspelmath (eds.), *The World Atlas of Language Structures Online*, Leipzig: Max Planck Institute for Evolutionary Anthropology.

Giannakidou, Anastasia. 2011. Negative and Positive Polarity Items. In Claudia Maienborn, Klaus von Heusinger and Paul Portner (eds.), *Semantics: An International Handbook of Natural Language Meaning*, volume 2, pages 1660–1712, Berlin: De Gruyter Mouton.

Horn, Laurence R. 1985. Metalinguistic Negation and Pragmatic Ambiguity. *Language* 61(1), 121–174.

Horn, Laurence R. 1989. *A Natural History of Negation*. Chicago, IL: Chicago University Press.

Karttunen, Lauri and Peters, Stanley. 1979. Conventional Implicature. In Choon-Kyu Oh and David A. Dinneen (eds.), *Presupposition*, volume 11 of *Syntax and Semantics*, pages 1–56, Bloomington, IN: Academic Press.

King, Tracy Holloway. 1995. *Configuring Topic and Focus in Russian*. Stanford, CA: CSLI Publications.

Klima, Edward. 1964. Negation in English. In Jerry A. Fordor and Jerrold Katz (eds.), *The Structure of Language*, pages 246–323, New Jersey: Prentice Hall.

Krasnowska-Kieraś, Katarzyna and Patejuk, Agnieszka. 2015. Integrating Polish LFG with External Morphology. In Markus Dickinson, Erhard Hinrichs, Ag-

nieszka Patejuk and Adam Przepiórkowski (eds.), *Proceedings of the Fourteenth International Workshop on Treebanks and Linguistic Theories (TLT 14)*, pages 134–147, Warsaw: Institute of Computer Science, Polish Academy of Sciences.

Kupść, Anna and Przepiórkowski, Adam. 2002. Morphological Aspects of Verbal Negation in Polish. In Peter Kosta and Jens Frasek (eds.), *Current Approaches to Formal Slavic Linguistics: Proceedings of the Second European Conference on Formal Description of Slavic Languages, Potsdam, 1997*, pages 337–346, Frankfurt am Main: Peter Lang.

Laczkó, Tibor. 2014. Outlines of an LFG-XLE Account of Negation in Hungarian Sentences. In Butt and King (2014), pages 304–324.

Laczkó, Tibor. 2015. On an LFG-XLE Treatment of Negation in Hungarian, slides presented at the PARGRAM meeting in Warsaw in February 2015; `http://typo.uni-konstanz.de/redmine/attachments/download/30/laczko_negation_ParGram_Warsaw_140204.pdf`.

Patejuk, Agnieszka and Przepiórkowski, Adam. 2012a. A Comprehensive Analysis of Constituent Coordination for Grammar Engineering. In *Proceedings of the 24th International Conference on Computational Linguistics (COLING 2012)*, pages 2191–2207, Mumbai, India.

Patejuk, Agnieszka and Przepiórkowski, Adam. 2012b. Towards an LFG Parser for Polish: An Exercise in Parasitic Grammar Development. In *Proceedings of the Eighth International Conference on Language Resources and Evaluation, LREC 2012*, pages 3849–3852, ELRA, Istanbul, Turkey.

Patejuk, Agnieszka and Przepiórkowski, Adam. 2014a. Structural Case Assignment to Objects in Polish. In Butt and King (2014), pages 429–447.

Patejuk, Agnieszka and Przepiórkowski, Adam. 2014b. Synergistic Development of Grammatical Resources: A Valence Dictionary, an LFG Grammar, and an LFG Structure Bank for Polish. In Verena Henrich, Erhard Hinrichs, Daniël de Kok, Petya Osenova and Adam Przepiórkowski (eds.), *Proceedings of the Thirteenth International Workshop on Treebanks and Linguistic Theories (TLT 13)*, pages 113–126, Tübingen, Germany: Department of Linguistics (SfS), University of Tübingen.

Patejuk, Agnieszka and Przepiórkowski, Adam. 2015. Parallel Development of Linguistic Resources: Towards a Structure Bank of Polish. *Prace Filologiczne* LXV, 255–270.

Payne, John. 1985. Negation. In Timothy Shopen (ed.), *Language Typology and Syntactic Description*, pages 197–242, Cambridge: Cambridge University Press.

Penka, Doris. 2015. Negation and Polarity. In Nick Riemer (ed.), *The Routledge Handbook of Semantics*, pages 303–319, London: Routledge.

Przepiórkowski, Adam. 1999. On Negative Eventualities, Negative Concord, and Negative *yes/no* Questions. In Tanya Matthews and Devon Strolovitch (eds.), *Proceeding of Semantics and Linguistic Theory 9*, pages 237–254, Ithaca, NY: CLC

Publications.

Przepiórkowski, Adam and Kupść, Anna. 1997. Unbounded Negative Concord in Polish: A Lexicalist HPSG Approach. In Jan Landsbergen, Jan Odijk, Kees van Deemter and Gert Veldhuijzen van Zanten (eds.), *Computational Linguistics in the Netherlands 1996: Papers from the Seventh CLIN Meeting*, pages 129–143, IPO, Center for Research on User-System Interaction, Eindhoven: Technische Universiteit Eindhoven.

Przepiórkowski, Adam and Kupść, Anna. 1999. Eventuality Negation and Negative Concord in Polish and Italian. In Robert D. Borsley and Adam Przepiórkowski (eds.), *Slavic in Head-Driven Phrase Structure Grammar*, pages 211–246, Stanford, CA: CSLI Publications.

Przepiórkowski, Adam, Bańko, Mirosław, Górski, Rafał L., Lewandowska-Tomaszczyk, Barbara, Łaziński, Marek and Pęzik, Piotr. 2011. National Corpus of Polish. In Zygmunt Vetulani (ed.), *Proceedings of the 5th Language & Technology Conference: Human Language Technologies as a Challenge for Computer Science and Linguistics*, pages 259–263, Poznań, Poland.

Przepiórkowski, Adam, Bańko, Mirosław, Górski, Rafał L. and Lewandowska-Tomaszczyk, Barbara (eds.). 2012. *Narodowy Korpus Języka Polskiego*. Warsaw: Wydawnictwo Naukowe PWN.

Richter, Frank and Sailer, Manfred. 2004. Polish Negation and Lexical Resource Semantics. *Electronic Notes in Theoretical Computer Science* 53, 309–321.

Zeijlstra, Hedde. 2015. The Morpho-Syntactic Realisation of Negation. In Tibor Kiss and Artemis Alexiadou (eds.), *Syntax – Theory and Analysis. International Handbook. Volume 1*, pages 274–309, Berlin: De Gruyter Mouton.