

**THE SYNTAX OF DISTANCE DISTRIBUTIVITY
IN POLISH:
WEAK HEADS IN LFG VIA RESTRICTION**

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

Proceedings of the LFG13 Conference

Miriam Butt and Tracy Holloway King (Editors)

2013

CSLI Publications

<http://csli-publications.stanford.edu/>

Abstract

In this paper we describe the syntax of distance distributivity in Polish, where the challenge is to uniformly analyse a number of function lexemes *PO* ‘each’ which share their form and semantic contribution, but differ in their syntactic behaviour. To this end we employ the LFG mechanisms of *templates* and *restriction*, as well as the HPSG notion of *weak heads*.

1 Introduction

The empirical aim of this paper is to discuss a phenomenon in Polish which is somewhat similar to the behaviour of English *EACH*, as in: *I gave the boys two apples each*.¹ The phenomenon where the so-called binominal *EACH* (Safir and Stowell, 1988) attaches to the noun phrase (NP) denoting the distributed quantity (*two apples*) and looks elsewhere in the sentence for the set to distribute over (*the boys*) is called *distance distributivity* (Zimmermann, 2002). As we will see below, distance distributivity in Polish involves not one but a number of simultaneously homophonous and homosemous² elements which differ in their syntactic behaviour.

The theoretical goal is to provide an LFG analysis of Polish distance distributivity that does not miss generalisations, i.e., one that relates the form *PO* to the distributive semantics only once in the grammar, even though there are a few distinct lexical items sharing this form and meaning. To this end we – rather trivially – employ the LFG mechanism of *templates* (Dalrymple et al., 2004; Asudeh et al., 2013) and – perhaps less trivially – build on the HPSG idea of *weak heads* (Tseng, 2002; Abeillé, 2003, 2006), formalised here with the use of the *restriction* mechanism (Kaplan and Wedekind, 1993).

There are two main sections corresponding to the two aims mentioned above: section 2 introduces the phenomenon in gory detail and section 3 proposes an LFG analysis. This paper is strongly coupled with Przepiórkowski 2013b, which presents an HPSG account of the same facts; correspondingly, the empirical section 2 is shared between these two papers (with apologies to readers). Moreover, Przepiórkowski 2013a provides the semantic half of the complete syntactico-semantic LFG analysis of distributivity in Polish, couched in Glue Semantics (Dalrymple, 1999, 2001).

[†]We thank both the internal reviewer – Tracy Holloway King – and the anonymous external reviewer for their valuable comments on this paper. Unfortunately, due to the page limit some of these comments could not be taken into consideration here, but will be addressed in the planned book-length treatment of distributivity in Polish.

¹A note on some conventions used in this paper: in the running text, lexemes are typeset in SMALL CAPITALS and word forms and example sentences – in *italics*. Numbered examples, as in (1)–(2) below, are typeset in ordinary upright font, with grammatical information in SMALL CAPITALS. Grammatical abbreviations mostly adhere to those recommended in Leipzig Glossing Rules (<http://www.eva.mpg.de/lingua/resources/glossing-rules.php>).

²We use the term *homosemous* as in Harley 2006, pp. 146ff., i.e., as referring to function (as opposed to content) morphemes or words which are not necessarily interchangeable in a given context but have the same meaning.

2 Distance distributivity in Polish

2.1 Preliminaries

The most basic use of the distributive *PO* is illustrated below:

- (1) Dałem im po jabłku.
gave-I them.DAT DISTR apple.LOC
'I gave them an apple each.'
- (2) Dałem im po dwa jabłka.
gave-I them.DAT DISTR two.ACC apples.ACC
'I gave them two apples each.'

These examples already illustrate one curious fact about *PO*: it may combine with the locative case (cf. (1)), reserved to arguments of prepositions in Polish, or with the accusative (cf. (2)). So at least some uses of *PO* must be treated as prepositional, as otherwise the overwhelming generalisation that in Polish locative only occurs on arguments of prepositions would be violated.

The first article-length treatment of the distributive *PO* in Polish linguistics is Łojasiewicz 1979.³ That paper suggests that the case of the phrase cooccurring with *PO* depends on the type of this phrase (NP in (1) and numeral phrase, or NumP, in (2); cf. Łojasiewicz 1979, p. 155), rather than on its grammatical number (singular in (1), plural in (2)). The matter should be easy to decide by considering plural noun phrases or singular numeral phrases. Unfortunately, the latter arguably do not exist in Polish; Przepiórkowski 2006b claims that all Polish numerals are plural, even those meaning 'a half' (Pol. *PÓŁ*) or 'a quarter' (Pol. *ĆWIERĆ*). Moreover, there seems to be a semantic restriction at work (cf. Łojasiewicz 1979; Przepiórkowski 2008; Bogusławski 2012) which prohibits the locative NP argument of *PO* from denoting aggregate entities of unspecified cardinality, as in:

- (3) *Dałem im po jabłkach.
gave-I them.DAT DISTR apples.LOC
'I gave them some apples each.' (intended)

Nevertheless, the issue may be resolved by considering plural NPs denoting non-aggregate entities, i.e., *plurale tantum* nouns such as *SPODNIE* 'trousers', *PERFUMY* 'perfumes', etc. As shown in Przepiórkowski 2006a, and contra Łojasiewicz 1979, such NPs may co-occur with *PO* and, when they do, they bear the locative case. This shows that the locative is indeed conditioned by the categorial status of the noun phrase and not by its singular grammatical number. Hence, from now on, we will refer to *PO* in (1) (and similar contexts) as *adnominal*, *PO_N*, and to *PO* in (2) (and such) as *adnumeral*, *PO_{NUM}*.

Łojasiewicz 1979, p. 154, also notes that the distribution of the distributive *PO* is limited to the accusative (as in (1)–(2) above), nominative and "secondary genitive"

³See also Franks 1995, §5.2.1, for a generative account and comparison with the distributive *PO* in other Slavic languages.

positions. What is meant by a “secondary genitive” position is a genitive dependent of a negated (cf. (5))⁴ or nominalised (cf. (6)) verb corresponding to the accusative dependent of the affirmative verb form (cf. (4)):

- (4) Dałem im jabłko.
gave-I them.DAT apple.ACC
‘I gave them an apple.’
- (5) Nie dałem im jabłka / *jabłko.
NEG gave-I them.DAT apple.GEN/*ACC
‘I didn’t give them an apple.’
- (6) Myśleliśmy o daniu im jabłka / *jabłko.
thought-we about giving them.DAT apple.GEN/*ACC
‘We were thinking about giving them an apple.’

For the adnominal PO_N , Łojasiewicz 1979 gives the following example of its occurrence in the otherwise nominative (subject) position:

- (7) Z drzew spadło po jabłku.
from trees fell.3.N.SG DISTR apple.LOC
‘An apple fell from each tree.’

To this, the following examples of PO_N in “secondary genitive” positions could be adduced, parallel to (5)–(6) above:

- (8) Nie dałem im po jabłku.
NEG gave-I them.DAT DISTR apple.LOC
‘I didn’t give them an apple each.’
- (9) Myśleliśmy o daniu im po jabłku.
thought-we about giving them.DAT DISTR apple.LOC
‘We were thinking about giving them an apple each.’

On the other hand, PO_N cannot occur in other case positions, including dative, instrumental and “primary genitive”. This is illustrated in (10a)–(12a), involving verbs subcategorising for dative, instrumental and genitive complements, contrasted with (10b)–(12b) involving roughly synonymous verbs subcategorising for accusative complements:^{5,6,7}

- (10) a. *Każdy z nich przyglądał się po (jednym) obrazie. (dative)
each.NOM of them watched RM DISTR one.LOC painting.LOC

⁴Genitive of negation in Polish, while more regular than in Russian, is more complex than would transpire from the remarks in this paper; see Przepiórkowski 2000.

⁵RM stands here for *reflexive marker*, a part of the inherently reflexive verbs PRZYGLĄDAĆ SIĘ ‘observe’ and CHWYCIĆ SIĘ ‘grab’.

⁶Note that the forms of JEDEN ‘one’ in these examples are not numerals, but rather adjectives, pace Saloni 1974 and Gruszczyński and Saloni 1978; see also Przepiórkowski 2006a for the reaffirmation of this position based on the cooccurrence of PO and JEDEN.

⁷(11a) sounds acceptable to one of the authors.

- ‘Each of them watched a/one painting.’ (intended)
- b. Każdy z nich oglądał po (jednym) obrazie.
 each.NOM of them watched DISTR one.LOC painting.LOC
 ‘Each of them watched a/one painting.’
- (11) a. *Każdy z nich kierował po (jednej) firmie. (instrumental)
 each.NOM of them ran DISTR one.LOC company.LOC
 ‘Each of them directed a/one company.’ (intended)
- b. Każdy z nich nadzorował po (jednej) firmie.
 each.NOM of them supervised DISTR one.LOC company.LOC
 ‘Each of them supervised a/one company.’
- (12) a. *Każdy z nich chwycił się po (jednej) linie. (genitive)
 each.NOM of them grabbed RM DISTR one.LOC rope.LOC
 ‘Each of them grabbed a/one rope.’ (intended)
- b. Każdy z nich chwycił po (jednej) linie.
 each.NOM of them grabbed DISTR one.LOC rope.LOC
 ‘Each of them grabbed a/one rope.’

At first glance facts seem to be similar for the adnumeral PO_{NUM} . Its occurrence in an accusative position is illustrated in (2) above, and the following examples, all from Łojasiewicz 1979, illustrate a (normally, see below) nominative position (cf. (13)), a genitive of negation position (cf. (14)) and an ad-gerundial genitive position (cf. (15)):

- (13) Na moich drzewach dojrzewa dziennie po kilka owoców.
 on my trees ripen.3.SG daily DISTR several.ACC fruit.GEN
 ‘Several pieces of fruit ripen every day on each of my trees.’
- (14) Dzieci nie dostały po dwa pączki.
 children.NOM NEG received.3.PL DISTR two.ACC donuts.ACC
 ‘The children did not get two donuts each.’
- (15) Myśleliśmy o daniu dzieciom po trzy pączki.
 thought-we about giving children.DAT DISTR three.ACC donuts.ACC
 ‘We thought about giving the children three donuts each.’

It should be noted that, while the accusative case of *dwa jabłka* ‘two apples’ in (2) could in principle reflect the fact that the PO_{NUM} -phrase occupies an accusative position (PO_{NUM} would be transparent to case assignment), examples (14)–(15), where such PO_{NUM} -phrases occur in genitive positions, show that PO_{NUM} does (or may, see below) assign the accusative case, i.e., that it does (or may) behave like a preposition.

All these considerations lead to the conclusion that there must be (at least) two different distributive elements *po*: one assigning the locative to NPs, and another assigning the accusative to NumPs. In fact, Łojasiewicz 1979, p. 158, discusses the possibility of a single distributive *po* assigning a separate case, *distributivus*, which

would always be syncretic with locative or accusative, depending on the grammatical class.⁸ She rejects this idea, though, on the basis of the apparent impossibility of such NP and NumP *distributivus* phrases to be coordinated into a single argument of PO and claims that the following example should only mean *You'll get one apple each, as well as two pears and five plums*, and not – as intended – *Each of you will get one apple, two pears and five plums*:

- (16) Dostaniecie po jednym jabłku, dwie gruszki i pięć
 receive-you.FUT DISTR one.LOC apple.LOC two.ACC pears.ACC and five.ACC
 śliwek.
 plums.GEN

‘Each of you will get one apple, two pears and five plums.’ (*intended*)

‘You will get one apple each, as well as two pears and five plums.’ (*actual*)

While remaining agnostic about such examples, we concur with Łojasiewicz 1979 that PO_N and PO_{NUM} should not be conflated into a single lexeme. In the remainder of this empirical section we will have nothing more to say about the adnominal PO_N and will concentrate on PO_{NUM} .

2.2 Three distributive elements PO

2.2.1 Adnumeral PO in subject positions

As in other Indo-European languages, finite verbs agree with nominative subjects in Polish, and otherwise occur in the default third person singular neuter form (Dziwirek, 1990). This generalisation is upheld in (7) and (13) above, where the subjects headed by PO_N and PO_{NUM} , respectively, are prepositional phrases and, hence, caseless. From this perspective, the following examples from Łojasiewicz 1979, p. 154, are surprising.⁹

- (17) W pokojach będą po dwa fotele.
 in rooms be.FUT.PL DISTR two.NOM.PL armchair.NOM.PL
 ‘There will be two armchairs in each room.’

- (18) Na ławkach leżały po trzy arkusze papieru.
 on benches lay.PL PO three.NOM.PL sheet.NOM.PL paper.GEN.SG
 ‘There lay three sheets of paper on each bench.’

Here, the verb clearly agrees with the numeral phrase following PO_{NUM} . Łojasiewicz 1979 does not draw the obvious conclusion from these examples, but if the overwhelming generalisation concerning subject–verb agreement in Polish is to be maintained, (17)–(18) must be analysed as involving nominative subjects. In particular, such subjects cannot be run-of-the-mill prepositional phrases.

⁸She also considers the two fossilised expressions *po czemu* ‘how much each’ and *po złotemu* ‘one zloty each’, where *czemu* and *złotemu* are dative forms.

⁹Case values indicated in glosses reflect the received wisdom. In the analysis presented below we will claim that the numeral (*dwa, trzy*) and the noun heading the following NP (*fotele, arkusze*) are in the accusative, and that *po* is the sole bearer of the nominative case; see §2.3.

The issue is somewhat obfuscated by the fact that numeral phrases following PO_{NUM} in all examples above are syncretic between nominative and accusative, at least in the sense that they may occur in subject positions and in (accusative) direct object positions.¹⁰ So perhaps all numeral phrases occurring after PO_{NUM} should be analysed as nominative, rather than accusative?

Fortunately, there exist non-syncretic nominative forms of the paucal numerals *DWA* ‘two’, *TRZY* ‘three’ and *CZTERY* ‘four’, namely, the human-masculine forms *dwaj*, *trzej* and *czterej*, as in the following example:

- (19) *Radę* *tworzyli* *dwaj* *przedstawiciele* *regionu*.
 council.ACC constituted.PL two.NOM representatives.NOM region.GEN
 ‘Two region representatives constituted the council.’

Crucially, such nominative forms cannot occur after PO_{NUM} in accusative or “secondary genitive” positions, which confirms the analysis of PO_{NUM} as governing the accusative – not nominative – case there:

- (20) (Nie) *przydzieliłem* *im* *po* *dwóch* *przedstawicieli*.
 NEG assigned-I them.DAT DISTR two.ACC representatives.ACC/GEN
 ‘I (did not) assign(ed) them two representatives each.’

- (21)**(Nie) przydzieliłem* *im* *po* *dwaj* *przedstawiciele*.
 NEG assigned-I them.DAT DISTR two.NOM representatives.NOM

On the other hand, phrases headed by such unambiguously nominative paucal numerals may co-occur with PO_{NUM} in the subject position, duly resulting in subject–verb agreement; although in some publications they are regarded marginal (Łojasiewicz, 1979, p. 158), doubtful or even downright unacceptable (Derwojedowa, 2011, pp. 144–145), they do occur in texts, as in the following attested examples:¹¹

- (22) *Prezydent proponuje, aby Radę* *Federacji* *tworzyli* *po*
 president proposes that council.ACC federation.GEN constitute.PL DISTR
dwaj *przedstawiciele* *każdego* *regionu*...
 two.NOM representatives.NOM each.GEN region.GEN
 ‘The President proposes that two representatives of each region constitute the Federation Council.’ (NKJP)

¹⁰See Przepiórkowski 1999 for arguments that non-paucal numerals (as well as some human-masculine paucal numerals) in the subject position are in fact accusative; e.g., (13) without the *po* would still be grammatical and the subject *kilka owoców* would be analysed as accusative. On the other hand, (non-human-masculine) paucal numeral forms like *dwa* ‘two’ and *trzy* ‘three’ in (17)–(18), would be analysed as nominative. The observation that some numeral phrases in the subject position occur in the accusative has a long history, dating back at least to Małecki 1863 and Krasnowolski 1897, and – more recently – Franks 1995, but it is also very controversial in Polish linguistics; see, e.g., Saloni 2005 and Miechowicz-Mathiasen and Witkoś 2007 for discussion, and Przepiórkowski and Patejuk 2012a,b for an LFG analysis.

¹¹The first example comes from the National Corpus of Polish (NKJP; Przepiórkowski et al. 2012; <http://nkjp.pl>), the second – from the Internet (found via Google; <http://historia.pgi.pl/demokracja.php>, last accessed on 30 September 2013).

- (23) Do Senatu wybierani są po dwaj senatorzy z każdego stanu.
to Senate elected.PL are.PL DISTR two.NOM senators.NOM from each state
'Two senators from each state are elected to the Senate.' (Google)
- (24) ...awans uzyskali po trzech najlepsi z każdej kategorii.
promotion obtained.PL DISTR three.NOM best.NOM.PL from each category
'Three best ones from each category qualified.' (Google)

Also Łojasiewicz 1979, p. 158, admits forms such as *dwaj* "in some constructions", citing as grammatical the following example:

- (25) Stańcie tu, po dwaj z każdej strony.
stand.IMP.PL here DISTR two.NOM from each side
'Stand here, two on each side!'

In summary, the data discussed in this subsection calls for distinguishing (at least) two adnumeral elements PO_{NUM} : one, which we will call PO_{NUM}^{ACC} , assigns the accusative case, even in the "secondary genitive" positions, and another one, PO_{NUM}^{MOD} , which may occur with nominative numeral phrases. The relative distribution of these two distributive adnumeral elements will be discussed in §2.3, but first we provide additional arguments for the existence of a separate PO_{NUM}^{MOD} and some justification for the superscript MOD (for *modifier*).

2.2.2 Adnumeral po in other positions

As apparently first noted in Przepiórkowski 2010, PO_{NUM} sometimes occurs also in dative positions. When it does, the numeral phrase must also bear the dative case. The following attested examples illustrate this:

- (26) ...nagroda należy się po trzech osobom z każdej klasy...
reward is due to DISTR three.DAT person.DAT.PL from each class
'Three people from each class deserve a reward.' (NKJP)
- (27) Broń... została przekazana po dwóm osobom z każdego
weapon AUX transferred.PASS DISTR two.DAT person.DAT.PL from each
ugrupowania.
group
'The weapon was handed in to two people from each group.' (Google)
- (28) ...cyklicznie dawał odpoczywać po dwóm zawodnikom...
cyclically let.SG rest DISTR two.DAT players.DAT
'He cyclically let two players take rest.' (Google)

While perhaps less frequent, analogous examples may be found involving instrumental positions,¹² cf. (29)–(31), and even an occasional genitive or locative position, cf. (32) and (33), respectively.

- (29) Obie strony dysponują w końcu po czterema armiami.
both sides have at their disposal in the end DISTR four.INST armies.INST

¹²We are grateful to Anna Kibort for pointing this out.

- ‘Both sides have at their disposal four armies each in the end.’ (Google)
- (30) Każde z nich w białym kitlu, dużych okularach, z po dwiema
 each of them in white lab coat big glasses with DISTR TWO.INST
 teczkami – w jednej są narzędzia, w drugiej dokumentacja.
 briefcases.INST in one are tools in second documentation
 ‘Each of them in a white lab coat, big glasses, with two briefcases each – tools
 are in the first one, documentation in the other.’ (Google)
- (31) Jego... uszy są... ozdobione po trzema złotymi kolczykami u
 his ears are ornamented DISTR three.INST gold.INST earrings.INST at
 dołu małżowiny.
 bottom auricle
 ‘His ears are ornamented with three gold earrings each at the bottom of the
 auricle.’ (Google)
- (32) Komisja pracuje w zespołach złożonych z po dwóch
 Commission works in teams consisting of DISTR TWO.GEN
 przedstawicieli strony kościelnej i strony rządowej oraz po
 representatives.GEN side church and side governmental and DISTR
 jednym przedstawicielu organów nadrzędnych nad uczestnikami
 one.LOC representative.LOC authorities superior to participants
 postępowania.
 proceedings
 ‘(Church Property) Commission works in teams consisting of two representa-
 tives each of the church side and the government side and of one representative
 each of authorities superior to the participants of the proceedings.’ (NKJP)
- (33) Prawie wszyscy zawodnicy występowali w po dwóch formacjach.
 almost all players played in DISTR TWO.LOC formations.LOC
 ‘Almost all players played in two formations each.’ (Google)

Similarly to (22)–(25), such examples are often judged marginal or even un-acceptable by many native speakers, and as fully acceptable by others. It seems reasonable, then, to assume that the same lexical item is responsible for all these occurrences and that it is internalised in the grammars of different native speakers to various extents. The most conspicuous feature of this PO_{NUM}^{MOD} is that it is transparent to case assignment and simply transmits the case assigned to its position: nominative in (22)–(25) (and, perhaps, in the earlier (17)–(18), but see below), dative in (26)–(28), instrumental in (29)–(31), genitive in (32) and locative in (33). We conclude that PO_{NUM}^{MOD} cannot be analysed as a case-assigning preposition, but should rather be treated as an element transparent to case assignment, perhaps an “adnumeral operator” in the sense of Grochowski 1997, §2.4.10. Below, in §3.2, we provide an LFG analysis which – while preserving this intuition – still treats PO_{NUM}^{MOD} as a syntactic head, on a par with PO_{NUM}^{ACC} and PO_N .

2.3 The distribution of the three elements PO

It is easy to recognise PO_N – it occurs with nominal, not numeral phrases. On the other hand, it is not always clear which of the two adnumeral elements, PO_{NUM}^{ACC} or PO_{NUM}^{MOD} , surfaces in a given context. Consider the basic example (2). In the previous subsection we established that PO_{NUM}^{MOD} is transparent to case assignment, so it could be claimed that *po* in this example is a form of PO_{NUM}^{MOD} and that the accusative case on *dwa jabłka* ‘two apples’ reflects the accusative case assignment to the direct object. On the other hand, we also saw that at least in some adnumeral positions, namely (14)–(15), a different PO is needed, PO_{NUM}^{ACC} , which assigns the accusative case, and this PO_{NUM}^{ACC} could also be claimed to occur in (2). So now we have three ways of analysing (2): as involving PO_{NUM}^{ACC} , as involving PO_{NUM}^{MOD} , or as ambiguous between the two analyses.

Similarly, (13) could be analysed as involving PO_{NUM}^{ACC} , which assigns the accusative to *kilka owoców* ‘several fruit’, or as involving PO_{NUM}^{MOD} , transparent to the assignment of the accusative case to such numeral phrases in the subject position (cf. fn. 10), or as ambiguous between the two.

When deciding such cases, we take as crucial the observation of the previous subsection, namely, that occurrences of PO_{NUM}^{MOD} are rare, often judged as marginal or unacceptable. That is, since both (2) and (13) are fully acceptable, we assume that they involve PO_{NUM}^{ACC} . Note that this in principle does not exclude the possibility of the ambiguity between PO_{NUM}^{ACC} and PO_{NUM}^{MOD} , but the latter analysis will be more marginal than the former, perhaps altogether inaccessible to some speakers.¹³

On the basis of these considerations we assume that the three elements PO surface in the following examples:

PO_N – (1), (7)–(9), (10b)–(12b);

PO_{NUM}^{ACC} – (2), (13)–(15), (20);

PO_{NUM}^{MOD} – (22)–(33).

The only two examples involving PO not classified here are (17)–(18), with paucal non-human-masculine numeral phrases following PO in the subject position. Such examples, while exhibiting subject–verb agreement and, hence, a nominative subject, are judged as acceptable by Łojasiewicz (1979, p. 154) and as significantly more acceptable than the clear cases of PO_{NUM}^{MOD} in (23) and (27) by Derwojedowa (2011, p. 145). As such, they seem to contradict the generalisation just proposed: since they occur in the nominative position and apparently contain a nominative NumP they should involve PO_{NUM}^{MOD} , but since they are acceptable, or at least clearly more acceptable than uncontroversial uses of PO_{NUM}^{MOD} , they should involve PO_{NUM}^{ACC} .

The following section presents an analysis which eliminates this contradiction. According to this analysis, the acceptable (17)–(18) involve the accusative-assigning PO_{NUM}^{ACC} , so the numeral phrases *dwa fotele* ‘two armchairs’ and *trzy arkusze*

¹³However, if PO_{NUM}^{MOD} surfaced in (2), we would expect – contrary to facts – the numeral phrase to be able to occur in the genitive when the verb is negated or nominalised; see the discussion in §3.4 below, esp., under (47).

papieru ‘three sheets of paper’ are taken to be accusative here. However, PO_{NUM}^{ACC} is not treated as an ordinary preposition here, but rather an element which may receive its own case – here nominative – and agree with the verb in number and gender.

3 LFG Analysis

3.1 Grammatical classes of the three elements *po*

What are the grammatical classes – or parts of speech – of the three elements established above? They are all clearly function – rather than content – words, so we employ here the comprehensive classification of Polish function expressions of Grochowski 1997.

First of all, PO_N must be classified as a preposition (P), as it governs the – strictly prepositional – locative case.

Secondly, PO_{NUM}^{MOD} rather easily falls into the class of “adnumeral operators” (abbreviated to AD_{NUM} here). Grochowski 1997, §2.4.10, defines adnumeral operators as noninflecting lexemes which cannot function independently as utterances, which cannot relate constituents (in the sense in which conjunctions and prepositions do relate constituents), which have a fixed linear position and which do not combine with a verb but do combine with a numeral. Prototypical examples include *BLISKO* ‘nearly’ (as in *blisko trzy miesiące* ‘nearly three months’), *OKOŁO* ‘around’ (e.g., *około dwa tygodnie* ‘around two weeks’) and *PRZESZŁO* ‘over’ (e.g., *przeszło sto osób* ‘over a hundred people’). While it is not a defining characteristic of adnumeral operators, they are usually taken to have an approximative meaning (Grochowski 1997, Duszkin 2010, Doboszyńska-Markiewicz 2012). The distributional elements *po* do not share this approximative feature with prototypical adnumeral operators, but otherwise PO_{NUM}^{MOD} satisfies all strictly defining properties of adnumeral operators.

Finally, PO_{NUM}^{ACC} is a little harder to fit into Grochowski’s (1997) classification: it occurs strictly adnumerally, like adnumeral operators, but it also governs a specific case (accusative), like prepositions. This situation is somewhat similar to that of *OKOŁO* ‘around’ which may govern the genitive case or may be transparent to case assignment. For this reason, Grochowski 1997, pp. 73–74, distinguishes two lexemes *OKOŁO*, even though both occur adnumerally: a preposition and an adnumeral operator. Following this example, one should classify PO_{NUM}^{ACC} as a preposition. However, in LFG, grammatical class labels such as N, P or – here – AD_{NUM} are used mainly in syntactic (c-structure) rules. In the syntactic analysis proposed in §3.3 below, PO_{NUM}^{ACC} and PO_{NUM}^{MOD} , but not PO_N , are handled by the same syntactic rule, namely, the rule for numeral phrases involving adnumeral operators. Hence, we decide to include PO_{NUM}^{ACC} in the class of adnumeral operators, together with PO_{NUM}^{MOD} .

3.2 Lexical entries of the three elements *po*

The immediate problem when constructing lexical entries for the three elements *po* is how not to miss obvious generalisations. In particular, the three entries share

at least the form (*po*), the distributive semantics, and the part of the PRED value specifying that the predicate is *po*, regardless of its arity (i.e., that $(\uparrow \text{ PRED FN}) = \text{PO}$, cf. Asudeh et al. 2013, p. 23).¹⁴

The standard LFG way to handle such potential redundancies is to employ the mechanism of templates (Dalrymple et al., 2004; Asudeh et al., 2013). The first version of the common template for the three lexical entries is given in (34), and the general schema of the entries is presented in (35).

$$(34) \text{ poDIST} = (\uparrow \text{ PRED FN}) = \text{PO} \quad (\textit{provisional})$$

DISTRIBUTIVE-SEMANTICS

$$(35) \text{ PO} \quad \text{P} \quad @\text{poDIST} \quad \dots \quad (\textit{general schema})$$

$$\text{ADNUM} \quad @\text{poDIST} \quad \dots$$

$$\text{ADNUM} \quad @\text{poDIST} \quad \dots$$

Note that the form *po* is specified once in the lexical entries (35), and the predicate and the semantic constructor – in the shared *poDIST* template in (34). We do not have anything to say about the semantics of distance distributivity here (*DISTRIBUTIVE-SEMANTICS* is just a placeholder in (34)), but see Przepiórkowski 2013a for an account compatible with the current syntactic analysis.

As a preposition, PO_N is a head which takes an object and assigns (or checks) the locative case: $(\uparrow \text{ OBJ CASE}) = \text{LOC}$. The PRED value of PO_N will thus be ‘ $\text{PO}\langle \text{OBJ} \rangle$ ’.

Also $\text{PO}_{\text{NUM}}^{\text{ACC}}$ must be analysed as the head of the “ $\text{PO}_{\text{NUM}}^{\text{ACC}} + \text{NumP}[\text{ACC}]$ ” construction; otherwise, if $\text{NumP}[\text{ACC}]$ were the head, the construction would be expected to occur only in accusative positions. Hence, the lexical entry of $\text{PO}_{\text{NUM}}^{\text{ACC}}$ will contain the equations $(\uparrow \text{ OBJ CASE}) = \text{ACC}$ and $\text{PRED} = \text{‘PO}\langle \text{OBJ} \rangle$ ’.

Finally, since we would like $\text{PO}_{\text{NUM}}^{\text{MOD}}$ to be handled by the same c-structure rule as $\text{PO}_{\text{NUM}}^{\text{ACC}}$ (cf. §3.3 below), they should ideally both have the same headedness status with respect to the following numeral phrase, so we should have $\text{PRED} = \text{‘PO}\langle \text{OBJ} \rangle$ ’ again. Hence, since the complete PRED value of the three elements *po* is the same, we can make it part of the template:

$$(36) \text{ poDIST} = (\uparrow \text{ PRED}) = \text{‘PO}\langle \text{OBJ} \rangle$$

DISTRIBUTIVE-SEMANTICS

$$(37) \text{ PO} \quad \text{P} \quad @\text{poDIST} \quad (\textit{all not final})$$

$$\quad \quad \quad (\uparrow \text{ OBJ CASE}) = \text{LOC} \quad \dots$$

$$\quad \quad \text{ADNUM} \quad @\text{poDIST}$$

$$\quad \quad \quad (\uparrow \text{ OBJ CASE}) = \text{ACC} \quad \dots$$

$$\quad \quad \text{ADNUM} \quad @\text{poDIST} \quad \dots$$

However, if $\text{PO}_{\text{NUM}}^{\text{MOD}}$ is the head of the “ $\text{PO}_{\text{NUM}}^{\text{MOD}} + \text{NumP}$ ” construction, how can we explain the subject–verb agreement in (22)–(24)? Evidently, $\text{PO}_{\text{NUM}}^{\text{MOD}}$ in such environments must bear the nominative case (a precondition for the subject–verb agreement in Polish) and, moreover, must “inherit” number and gender features from its NumP

¹⁴We assume here that the distributive *po*, which – unlike “case-marking prepositions” arbitrarily governed by verbs – contributes to the semantics of the sentence, has its own PRED value.

OBJ. To this end, we treat PO_{NUM}^{MOD} roughly as a weak head in the sense in which this term is used in Head-driven Phrase Structure Grammar.

Tseng 2002, p. 273, defines a weak head as an element which inherits from its complement all morphosyntactic features (the HEAD value), as well as semantics and any unsatisfied valence properties, and adds a specific marking. Such weak heads are to be used *in lieu* of the standard HPSG markers, e.g., in the analysis of complementisers such as THAT. Such a weak head complementiser takes a clause as its argument, inherits the HEAD value of this clause, i.e., all morphosyntactic properties of the verb heading the clause, and introduces the MARKING attribute with the value *that*. Tseng 2002, p. 279, advocates the use of this mechanism in the analysis of German non-predicative prepositions, to some extent similar to the distributive PO discussed here. Further, Abeillé 2003, 2006, building on this idea, proposes to treat French coordinate conjunctions as weak heads, *sans* the requirement of sharing the semantics. In this paper, we will call such elements – inheriting morphosyntactic properties of their complements, but not their semantics – *weakish heads*.

In LFG, a natural way to encode the HPSG idea of weak(ish) heads is to use the mechanism of restriction, as defined in Kaplan and Wedekind 1993. Since we do not want to equate the ‘PO⟨OBJ⟩’ PRED value of PO_{NUM}^{MOD} with the PRED value of its numeral object, nor do we want to say that the OBJ of PO_{NUM}^{MOD} (i.e., the NumP argument) is the same as the OBJ of the following numeral (i.e., the NP argument of the numeral), the relevant equation to add to the lexical entry of PO_{NUM}^{MOD} is: $\uparrow \backslash \text{PRED} \backslash \text{OBJ} = (\uparrow \text{OBJ}) \backslash \text{PRED} \backslash \text{OBJ}$. As the values of all other features are shared between PO_{NUM}^{MOD} and its numeral object, the whole “ PO_{NUM}^{MOD} + NumP” construction will have the same case (nominative in (22)–(25), but, e.g., instrumental in (29)–(31), etc.), number and gender as the object NumP.

This brings us back to the promise made at the end of §2.3 concerning (17)–(18). As noted above, these examples exhibit subject–verb agreement, implying that the whole subject PO-phrase is in the nominative case, but – unlike, e.g., (22)–(24) – they are fully acceptable, suggesting that these examples involve PO_{NUM}^{ACC} rather than the marginal PO_{NUM}^{MOD} . The analysis we would like to propose here is to treat PO_{NUM}^{ACC} as a weakish head, on a par with PO_{NUM}^{MOD} . But, since PO_{NUM}^{ACC} assigns the accusative case and may itself occur also in non-accusative positions (nominative and “secondary genitive”), we assume that PO_{NUM}^{ACC} does not inherit CASE value from its OBJ. The next version of the lexical entries of the distributive PO summarises these considerations:

- (38) PO P @PODIST (all not final)
 $(\uparrow \text{OBJ CASE}) = \text{LOC} \dots$
 ADNUM @PODIST
 $(\uparrow \text{OBJ CASE}) = \text{ACC}$
 $\uparrow \backslash \text{PRED} \backslash \text{OBJ} \backslash \text{CASE} = (\uparrow \text{OBJ}) \backslash \text{PRED} \backslash \text{OBJ} \backslash \text{CASE} \dots$
 ADNUM @PODIST
 $\uparrow \backslash \text{PRED} \backslash \text{OBJ} = (\uparrow \text{OBJ}) \backslash \text{PRED} \backslash \text{OBJ} \dots$

The final issue to be formalised in such lexical entries is the limited distribution of various elements PO . As repeatedly noted, PO_N and PO_{NUM}^{ACC} may only occur in nominative, accusative and “secondary genitive” positions. Przepiórkowski 1999, §5.1.4.3, notes that these positions seem to be exactly the structural case positions in Polish – in the sense of the structural vs. lexical (or inherent) case dichotomy long discussed in the generative literature – and we will assume here that this observation is essentially correct. Hence, the first two lexical entries must include equations encoding this restriction.

Technically, we follow Przepiórkowski and Patejuk 2012a,b in assuming the presence of an attribute like sc on cased phrases, whose value is + if and only if this phrase bears a structural case. Separate principles of the grammar will have the effect of constraining structural case positions to nominative, accusative and “secondary genitive”, and lexical case positions to “primary genitive”, dative, instrumental and locative;¹⁵ see Przepiórkowski 1999 for a more comprehensive HPSG formalisation of the structural/lexical case dichotomy.

As to PO_{NUM}^{MOD} , (22)–(33) show that it may occur at least in nominative, dative and instrumental positions, with some examples found also for the genitive and locative. Hence, it is reasonable to adopt as the first approximation the hypothesis that PO_{NUM}^{MOD} may, in principle, marginally occur in any case position, perhaps with stronger dispreferences for some positions than for other.¹⁶

The relevant parts of the final (but see (41) below) lexical entries for the three distributive elements PO are given below:¹⁷

(39) PO	P	@ PO_{DIST}	<i>(almost final)</i>
		($\uparrow sc$) = +	
		($\uparrow OBJ\ CASE$) = LOC	
	AD_{NUM}	@ PO_{DIST}	<i>(final)</i>
		($\uparrow sc$) = +	
		($\uparrow OBJ\ CASE$) = ACC	
		$\uparrow \backslash PRED \backslash OBJ \backslash CASE = (\uparrow OBJ) \backslash PRED \backslash OBJ \backslash CASE$	
	AD_{NUM}	@ PO_{DIST}	<i>(final)</i>
		$\uparrow \backslash PRED \backslash OBJ = (\uparrow OBJ) \backslash PRED \backslash OBJ$	

3.3 PO at c-structure

We do not assume any special syntactic rules involving PO_N . Categorially, it is a preposition, and it combines with the following NP via the usual rules forming prepositional phrases. In particular, we claim that any restrictions on the argument

¹⁵We do not consider the seventh case in Polish, vocative, which is never assigned in the lexicon.

¹⁶In particular, we have not found any examples of PO_{NUM}^{MOD} in structural (or “secondary”) genitive positions, and it seems impossible to decide whether such PO_{NUM}^{MOD} may occur in accusative positions, as it is indistinguishable from PO_{NUM}^{ACC} in such environments; see §3.4 below.

¹⁷It is possible to factor out the equation ($\uparrow sc$) = + into a subtemplate of the PO_{DIST} template, to further reduce redundancy in these lexical entries.

of PO_N are best formulated at levels different than c-structure. One such restriction, concerning cardinality, was mentioned in §2.1 and it is clearly a semantic constraint (Przepiórkowski, 2008; Bogusławski, 2012). Another, however, looks like a c-structure constraint: PO_N may apparently only combine with NPs, not with NumPs. This could be naturally encoded via a special c-structure rule to the effect that the phrase following PO_N must be an NP, or – perhaps less naturally – by an f-structure rule saying the OBJ of PO_N cannot be numeral. We choose here the latter option, also because the object of PO_N – just as nominal objects of other prepositions – may actually also be realised as an adjective phrase such as *najlepsza z ofert* ‘(the) best of offers’ in the following example:

- (40) Komisja... wybrała... po najlepszej... ze złożonych ofert
 commission.NOM chose DISTR best.LOC.SG of submitted.GEN offers.GEN
 każdego wykonawcy.
 every.GEN contractor.GEN
 ‘The commission selected the best offer each from those submitted by every contractor.’ (Google)

In Polish, numerals may be identified at f-structure via the attribute *ACM* (“accommodability”), whose exact meaning is explained in Przepiórkowski and Patejuk 2012a,b, so the exclusion of numeral phrases may be encoded via $\neg(\uparrow OBJ ACM)$:

- (41) $PO \quad P \quad @PODIST \quad (final)$
 $(\uparrow SC) = +$
 $(\uparrow OBJ CASE) = LOC$
 $\neg(\uparrow OBJ ACM)$

On the other hand, a special c-structure rule is needed for introducing an adnumeral operator, such as PO_{NUM}^{ACC} and PO_{NUM}^{MOD} , into a numeral phrase:¹⁸

- (42) NumP \rightarrow AdNum Num NP
 $\downarrow = \uparrow \quad (\uparrow OBJ) = \downarrow \quad (\uparrow OBJ OBJ) = \downarrow$

One thing to note about this rule is that, while it is a rule for a numeral phrase, the actual head (in the sense of the $\downarrow = \uparrow$ equation) is the adnumeral operator. This is possible due to the weakish head status of AdNum elements, which inherit all relevant feature values from the numeral argument.

Note also that, according to this rule, the numeral is adjacent to the preceding adnumeral operator. This reflects the following judgements from Przepiórkowski 2010 (attributed to Jadwiga Linde-Usiekiewicz and Paweł Rutkowski, p.c.):

- (43) a. Posłał go po 2 smaczne jabłka.
 sent-he him for 2.ACC tasty.ACC apples.ACC
 ‘He sent him to fetch 2 tasty apples.’
 b. Posłał go po smaczne 2 jabłka.
 sent-he him for tasty.ACC 2.ACC apples.ACC

¹⁸As is standard in Polish and Slavic linguistics, we assume that the NP following a numeral is its argument, i.e., that numeral phrases are normally headed by the numeral.

- (44) a. Dał każdemu po 2 smaczne jabłka.
 gave-he everyone DISTR 2.ACC tasty.ACC apples.ACC
 ‘He gave each of them 2 tasty apples.’
- b. *Dał każdemu po smaczne 2 jabłka.
 gave-he everyone DISTR tasty.ACC 2.ACC apples.ACC

While (44b) perhaps does not really deserve the asterisk (Derwojedowa, 2011, pp. 145–146), there is a palpable acceptability contrast between the fully acceptable (43b), involving the run-of-the-mill preposition *po* homophonous with the distributive elements considered in this paper, and the adnumeral PO_{NUM}^{ACC} in (44b). When the adnumeral operator is present, the adjective may only occur NP-internally, as in (44a), in concordance with rule (42). On the other hand, in case of the usual (AdNum-less) numeral phrase, adjectives may occur either NP-internally, as in (43a), or they may immediately precede the numeral, as in (43b), in concordance with the main rule for numeral phrases, given in (45):¹⁹

- (45) NumP → AdjP* Num NP
 $\downarrow \in (\uparrow \text{OBJ ADJ}) \quad \downarrow = \uparrow \quad (\uparrow \text{OBJ}) = \downarrow$

As also noted in Przepiórkowski 2010, other adnumeral operators, such as *z* ‘some, about’, seem to follow the pattern of (44), supporting the analysis just sketched:²⁰

- (46) a. Dałem każdemu z 5 moich książek.
 gave-I everyone.DAT about 5.ACC my.GEN books.GEN
 ‘I gave each of them around 5 books of mine.’
- b. *Dałem każdemu z moich 5 książek.
 gave-I everyone.DAT about my.GEN 5.ACC books.GEN

3.4 Analysis at work

Let us illustrate the analysis of this section with a few examples, starting with the most basic (1)–(2).

In (1), the usual c-structure rule for prepositional phrases (not given in this paper) may be used to form the PP *po jabłku* ‘DISTR apple’ headed by the preposition PO_N : the locative case of *jabłku* is consistent with case requirements in (41), the lexical entry of PO_N . On the other hand, this c-structure rule cannot be used to form an analogous PP *po dwa jabłka* ‘DISTR two apples’ in (2), as *dwa jabłka* is a numeral phrase bearing the ACM attribute and (41) contains the constraint $\neg(\uparrow \text{OBJ ACM})$ (and another, specifying the locative case). Moreover, none of the adnumerative operators *po* may form a constituent with *jabłku*, as the relevant c-structure rule (42) requires the presence of a numeral (and, additionally, PO_{NUM}^{ACC} requires its object to be in the accusative). Hence, the only distributive analysis of *po jabłku* must involve PO_N . While categorially *po jabłku* is a PP, it bears the $sc = +$ attribute introduced

¹⁹The *OBJ* is optional on AdjP* because such adjectival phrases may modify either the numeral directly or its NP argument.

²⁰A related contrast is reported in Doboszyńska-Markiewicz 2012, p. 132.

in (41), so – unlike typical prepositional phrases – it may occur in structural case positions, including the accusative in (1).

On the other hand, in (2), involving the apparent numeral phrase *dwa jabłka*, the c-structure rule (42) may form the actual numeral phrase consisting of an adnumeral operator *po*, the numeral *dwa* and the NP *jabłka*. Note that either PO_{NUM}^{ACC} or PO_{NUM}^{MOD} may be employed here and that either may combine with the accusative numeral *dwa*. PO_{NUM}^{ACC} forms a NumP whose case is constrained by the equation $sc = +$, and PO_{NUM}^{MOD} forms a NumP specified as accusative (as it shares case with its object). Thus, either NumP may occur in the structural accusative position in (2), rendering the sentence spuriously ambiguous. We stipulate that the reading involving the marginal PO_{NUM}^{MOD} is blocked by the fully acceptable structure with PO_{NUM}^{ACC} , but we may also extend the lexical entry of PO_{NUM}^{MOD} by a constraint to the effect that PO_{NUM}^{MOD} cannot bear the structural accusative or the structural genitive case (see fn. 21 below).

Considering the negated version of (1) in (8), the analysis proceeds in a way fully analogous to that of (1); the PP *po jabłku* now occurs in the genitive of negation position, which is also a structural case ($sc = +$) position.

Turning to the negated version of (2), given below (see (14) for an analogous example), we note that it does not exhibit the ambiguity seen in (2).

- (47) Nie dałem im po dwa jabłka.
 NEG gave-I them.DAT DISTR two.ACC apples.ACC
 ‘I didn’t give them two apples each.’

Only the numeral phrase formed with PO_{NUM}^{ACC} may occur here, bearing the $sc = +$ constraint and having its case resolved to genitive. In contrast, PO_{NUM}^{MOD} would transmit the genitive case to its object, resulting with a clash with the accusative *dwa jabłka*.²¹

Let us move to the subject position. In (7), involving the PO_N , the PP *po jabłku* bears again the $sc = +$ specification, so it may occur in the structural subject position, possibly receiving the nominative case. This calls for an explanation of the subject–verb non-agreement observed in (7) – the verb occurs in the default third person singular neuter form, apparently contrary to the generalisation that in Polish (as in other Indo-European languages) verbs agree with nominative subjects. The simplest stipulation would be that, while possibly bearing the *CASE* feature, such a PP headed by PO_N still does not bear number and gender (recall that PO_N is not a weakish head), so the verb cannot agree with it, reverting to the “default” form.²²

Also the *po*-phrase *po kilka owoców* ‘DISTR several fruits’ does not agree with the verb in (13), but the reason for this lack of agreement is different here. The numeral *kilka* ‘several’ is a non-paucal numeral governing a genitive NP (*owoców*

²¹However, the unacceptable **Nie dałem im po dwóch jabłek*, with the genitive *dwóch jabłek* ‘two apples’, should be grammatical with PO_{NUM}^{MOD} , unless we introduce the abovementioned constraint implying that PO_{NUM}^{MOD} cannot bear the structural genitive case.

²²Another stipulation, more consistent with the current XLE implementation (Patejuk and Przepiórkowski, 2012), would be to say that verbs only agree with broadly nominal subjects, excluding clausal subjects, infinitival subjects and – crucially – PPs regardless of case.

here) and, as such, it would receive the accusative case in the subject position (Przepiórkowski, 1999; Przepiórkowski and Patejuk, 2012a,b). Both adnumeral operators PO_{NUM}^{ACC} and PO_{NUM}^{MOD} are weakish heads inheriting, among other features, the ACM feature of numerals, crucial for the case assignment principles of Przepiórkowski and Patejuk 2012a,b. On the basis of the REC (“governing”) value of this feature, the whole PO-phrase *po kilka owoców* in the subject position receives the accusative case, just as the NumP *kilka owoców* would. So now the subject is broadly nominal (specifically, numeral), but it is in the accusative, hence, it does not agree with the verb, which again occurs in the default third person singular form (the neuter gender is not visible on present tense forms). Note that the same spurious ambiguity may be observed here as in the case of the object position in (2), and that it could be dealt with by the same constraint prohibiting PO_{NUM}^{MOD} from occurring in structural accusative positions.

This constraint cannot be extended to just any structural positions, as PO_{NUM}^{MOD} must be allowed to occur in nominative positions, to account for the marginal (22)–(24), which involve uncontroversially nominative paucal numerals agreeing with the verb. As PO_{NUM}^{ACC} assigns the accusative to its object, only PO_{NUM}^{MOD} is possible in here. This PO is a weakish head sharing all morphosyntactic features with its object. In particular, it bears the ACM feature *not* equal to REC (*dwaj* and *trzej* are agreeing paucal numerals, unlike the governing *kilka* and non-paucal numerals) and, hence, receives the nominative case via principles presented in Przepiórkowski and Patejuk 2012a,b and shares this case value with the nominative numeral and further with the NP object of the numeral. Moreover, as adnumeral operators PO also share number and gender with the numeral, they may participate in the subject–verb agreement, resulting in the grammatical (22)–(24).

Finally, let us consider the acceptable examples (17)–(18) involving numerals and NPs syncretic between nominative and accusative. The end of §2.3 promised an analysis of such sentences with PO_{NUM}^{ACC} and it should be clear now how such an analysis should proceed. Concentrating on (17), we note that PO_{NUM}^{ACC} assigns the accusative to *dwa fotele* ‘two armchairs’, itself bearing the specification $sc = +$; all other morphosyntactic features are shared between *po* and the numeral *dwa*. Since *dwa* is a paucal agreeing numeral and the whole PO-phrase occurs in the subject position, the phrase receives the nominative case. Hence, contrary to the initial grammatical glosses in (17), case values of particular words in the subject phrase are as indicated below:

- (17') W pokojach będą po dwa fotele.
 in rooms be.FUT.PL DISTR.NOM.PL TWO.ACC.PL armchair.ACC.PL
 ‘There will be two armchairs in each room.’

Again, an analysis involving PO_{NUM}^{MOD} is in principle also possible here, but we assume that it is either blocked by the more acceptable analysis involving PO_{NUM}^{ACC} or that a relevant constraint is added to the lexical entry of PO_{NUM}^{MOD} blocking its occurrence with non-human-masculine nominative numerals.

4 Conclusion

This paper deals with a very infrequent but intriguing phenomenon of distance distributivity in Polish involving function lexemes *po*. We demonstrated that (at least) three distinct lexemes are needed to handle the variety of distributive constructions, but we also showed how these homophonous and at the same time homosemous lexemes may be encoded in a way that – via the use of templates – minimises redundancy in the lexicon and in the grammar. In particular, although the case assignment properties of the three elements differ widely, with one of them actually being transparent to such case assignment, all three are analysed as heads of *po*-phrases – the two adnumeral elements as so-called weak(ish) heads, in the HPSG sense of the term, encoded in LFG with the use of the restriction mechanism.

Although the analysis presented here interacts closely with the analysis of numeral phrases given in Przepiórkowski and Patejuk 2012a,b, we strived to make the current paper self-contained, with only occasional references to those analyses, perhaps at the cost of oversimplifying slightly at places. We also had nothing to say here about the semantics of such distance distributivity in Polish, instead referring the reader to Przepiórkowski 2013a. While the topic of this paper is empirically negligible in the sense that the proposed analysis of the facts considered here will certainly not improve the results of any wide scope parser of Polish significantly, the complexity of the phenomenon is fascinating and deserves a book-length treatment.

References

- Abeillé, Anne. 2003. A Lexicon- and Construction-Based Approach to Coordinations. In Stefan Müller (ed.), *Proceedings of the HPSG 2003 Conference*, pages 5–25, Stanford, CA: CSLI Publications.
- Abeillé, Anne. 2006. In defense of lexical Coordination. *Empirical Issues in Syntax and Semantics* 6, 7–36.
- Asudeh, Ash, Dalrymple, Mary and Toivonen, Ida. 2013. Constructions with Lexical Integrity. *Journal of Language Modelling* 1(1), 1–54.
- Bogusławski, Andrzej. 2012. Polskie *po* dystrybucyjne: jednolitość ilościowego podziału zbiorowości. *Prilozi, oddelenie za lingvistika i literaturna nauka* XXXVII, 81–95.
- Butt, Miriam and King, Tracy Holloway (eds.). 2012. *The Proceedings of the LFG'12 Conference*, Stanford, CA, CSLI Publications.
- Dalrymple, Mary (ed.). 1999. *Semantics and Syntax in Lexical Functional Grammar: The Resource Logic Approach*. Cambridge, MA: The MIT Press.
- Dalrymple, Mary. 2001. *Lexical Functional Grammar*. San Diego, CA: Academic Press.
- Dalrymple, Mary, Kaplan, Ronald M. and King, Tracy Holloway. 2004. Linguistic Generalizations over Descriptions. In Miriam Butt and Tracy Holloway King

- (eds.), *The Proceedings of the LFG'04 Conference*, pages 199–208, Stanford, CA.
- Derwojedowa, Magdalena. 2011. *Grupy liczebnikowe we współczesnym języku polskim. Zarys opisu zależnościowego*. Warsaw: Uniwersytet Warszawski, Wydział Polonistyki.
- Doboszyńska-Markiewicz, Katarzyna. 2012. *Operatory adnumeratywne w języku polskim – dystrybucja i znaczenia*. Ph. D. dissertation, Uniwersytet Warszawski, Katedra Lingwistyki Formalnej.
- Duszkin, Maksim. 2010. *Wykładowiki przybliżoności adnumeratywnej w języku polskim i rosyjskim*. Warsaw: Sławistyczny Ośrodek Wydawniczy PAN.
- Dziwirek, Katarzyna. 1990. Default Agreement in Polish. In Katarzyna Dziwirek, Patrick Farrell and Errapel Mejías-Bikandi (eds.), *Grammatical Relations: A Cross-Theoretical Perspective*, Stanford, CA: CSLI Publications.
- Franks, Steven. 1995. *Parameters of Slavic Morphosyntax*. New York: Oxford University Press.
- Grochowski, Maciej. 1997. *Wyrażenia funkcyjne. Studium leksykograficzne*, volume 104 of *Prace Instytutu Języka Polskiego*. Cracow: Wydawnictwo IJP PAN.
- Gruszczyński, Włodzimierz and Saloni, Zygmunt. 1978. Składnia grup liczebnikowych we współczesnym języku polskim. *Studia Gramatyczne* II, 17–42.
- Harley, Heidi. 2006. *English Words: A Linguistic Introduction*. Malden, MA: Blackwell.
- Kaplan, Ronald M. and Wedekind, Jürgen. 1993. Restriction and correspondence-based translation. In *Proceedings of the 6th Conference of the European Chapter of the Association for Computational Linguistics (EACL 1993)*, pages 193–202, Utrecht.
- Krasnowolski, Antoni. 1897. *Systematyczna składnia języka polskiego*. Warsaw: Drukarnia Estetyczna K. Sierpińskiego.
- Łojasiewicz, Anna. 1979. O budowie wyrażen z przyimkiem *po* dystrybutywnym. *Polonica* V, 153–160.
- Małecki, Antoni. 1863. *Gramatyka języka polskiego*. Większa. Lwów.
- Miechowicz-Mathiasen, Katarzyna and Witkoś, Jacek. 2007. O podmiotach i ich przypadkach (w nawiązaniu do artykułów Zygmunta Saloniego i Adama Przepiórkowskiego). *Biuletyn Polskiego Towarzystwa Językoznawczego* LXIII, 101–114.
- Patejuk, Agnieszka and Przepiórkowski, Adam. 2012. 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.
- Przepiórkowski, Adam. 1999. *Case Assignment and the Complement-Adjunct Dichotomy: A Non-Configurational Constraint-Based Approach*. Ph.D. dissertation.

- tion, Universität Tübingen, Tübingen.
- Przepiórkowski, Adam. 2000. Long Distance Genitive of Negation in Polish. *Journal of Slavic Linguistics* 8, 151–189.
- Przepiórkowski, Adam. 2006a. O dystrybutywnym *po* i liczebnikach jedynkowych. *Polonica XXVI–XXVII*, 171–178.
- Przepiórkowski, Adam. 2006b. O inherentnej liczbie mnogiej liczebników *ĆWIERĆ*, *PÓŁ* i *PÓŁTORA*. *Poradnik Językowy* 9, 78–87.
- Przepiórkowski, Adam. 2008. Generalised Quantifier Restrictions on the Arguments of the Polish Distributive Preposition *po*. *Études Cognitives* 8, 159–177.
- Przepiórkowski, Adam. 2010. Towards a Construction Grammar Account of the Distributive *po* in Polish. *Études Cognitives* 10, 163–176.
- Przepiórkowski, Adam. 2013a. The Semantics of Distance Distributivity in Polish: A Glue Semantics Approach, to be submitted to *Empirical Issues in Syntax and Semantics 10* (CSSP 2013 Proceedings).
- Przepiórkowski, Adam. 2013b. The Syntax of Distance Distributivity in Polish: Preserving Generalisations with Weak Heads. In Stefan Müller (ed.), *Proceedings of the HPSG 2013 Conference*, pages 161–181, Stanford, CA: CSLI Publications.
- Przepiórkowski, Adam and Patejuk, Agnieszka. 2012a. On case assignment and the coordination of unlikes: The limits of distributive features. In Butt and King (2012), pages 479–489.
- Przepiórkowski, Adam and Patejuk, Agnieszka. 2012b. The puzzle of case agreement between numeral phrases and predicative adjectives in Polish. In Butt and King (2012), pages 490–502.
- Przepiórkowski, Adam, Bańko, Mirosław, Górski, Rafał L. and Lewandowska-Tomaszczyk, Barbara (eds.). 2012. *Narodowy Korpus Języka Polskiego*. Warsaw: Wydawnictwo Naukowe PWN.
- Safir, Ken and Stowell, Tim. 1988. Binominal *each*. In *Proceedings of the North East Linguistic Society (NELS), Vol. 18*, pages 426–450.
- Saloni, Zygmunt. 1974. Klasyfikacja gramatyczna leksemów polskich. *Język Polski* LIV, 3–13, 93–101.
- Saloni, Zygmunt. 2005. O przypadkach w języku polskim (na marginesie artykułu Adama Przepiórkowskiego). *Biuletyn Polskiego Towarzystwa Językoznawczego* LXI, 27–48.
- Tseng, Jesse. 2002. Remarks on Marking. In Frank van Eynde, Lars Hellan and Dorothee Beermann (eds.), *Proceedings of the HPSG 2001 Conference*, pages 267–283, Stanford, CA: CSLI Publications.
- Zimmermann, Malte. 2002. 'Boys Buying Two Sausages Each' – On the Syntax and Semantics of Distance Distributivity. Ph. D. dissertation, Universiteit van Amsterdam.