INTERMEDIARY AGENTS
AND UNEXPRESSED PRONOUNS

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Abstract

The aim of this paper is to show the full range of possible participant-function mappings available for the classes of verbs in Polish which denote predicates entailing an 'intermediary agent'. An intermediary agent is a semantic participant that can be conceptualised as an instrument or means with which the event is accomplished, or alternatively as the causer or instigator of this event. The particular verb classes involved include verbs of emission of smell, sound, or light, verbs expressing expansion of an aggregate or a mass/abstract entity (corresponding roughly to the English SWARM verbs), and verbs expressing physical or psychological states due to a stimulus which can be interpreted as an intermediary agent. I discuss how to model the identified alternations with LMT and offer argument structure models of all the variants. I argue that a certain type of clause which is often regarded as impersonal (due to the lack of a lexically expressed nominative subject, as well as the defocusing of the instigator) can be analysed as having a '*pro*-drop' subject (an unexpressed/incorporated pronoun or pronominal inflection) which may co-refer with an overtly expressed instrument or other oblique argument.

1   The set of constructions under consideration

I begin with a discussion of the class of verbs in Polish which includes verbs of emission of smell, sound, or light – examples of which are given in (1)-(3), respectively; and verbs expressing expansion of an aggregate or a mass/abstract entity – examples of which are given in (4).[1] Some of the verbs are reflexiva tantum, and others are reflexive variants of non-reflexive verbs which are reflexive when used inchoatively:

(1) a. *pachnieć*   'emit fragrance'   (4) a. *roić się*   'swarm, teem'
     b. *śmierdzieć* 'smell'   b. *kipieć*   'seethe, effervesce'
     c. *cuchnąć*   'stink'   c. *pęcznieć*   'swell, bulge'

(2) a. *grzmieć*   'rumble, roar'   d. *mrowić się*   'teem, swarm'
     b. *szumieć*   'hum, throb, rustle'   e. *wrzeć*   'seethe, throb'
     c. *huczeć*   'rumble, reverberate'   f. *przelewać się* 'overflow'

(3) a. *mienić się*   'glisten, be iridescent'
     b. *bielić się*   'appear to be white
                        and shiny, glisten'
     c. *migotać*   'glitter, shimmer'

These predicates can be thought of as denoting events that typically involve two entities as participants. One is the entity which emits the smell, sound, or light, or the entity which is the expanding aggregate or mass/abstract concept. The other entity is the location in which the event takes place, where the event is present and/or propagated.

It appears that in Polish the events in question can be conceptualised in three different ways, resulting in three different syntactic constructions forming a set of so-called 'alternations'. Argument alternations have been extensively discussed in syntactic literature since the beginning of generativism, and the work of Rappaport and Levin (1988), Pinker (1989), and Jackendoff (1990), has been particularly influential in formalising the differences between the semantic contents of the alternants. Dowty's (1991) theory of proto-roles attributes the different argument configurations to the different entailments produced by the related predicates, and Dowty (2000) offers an extensive discussion of the differences in the meanings between the English alternants involving *swarm* and *spray/load* verbs. The work presented in this paper follows from this tradition and assumes that the different syntactic frames correlate with different meanings, not only of the verbs themselves (resulting, for example, in the holistic vs partitive effect of the alternation), but also of the participants in the events denoted by the verbs. Hence, while the entities referred to by the arguments may be the same between the alternants, the semantic roles a particular entity fulfils in the different alternants may be different. This last distinction corresponds to Jackendoff's

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functional representation of arguments at 'action tier' and the representation of their conceptual roles at 'thematic tier' (1990:126ff).

Since it would be difficult to talk about 'agentivity' of any participants in the events discussed here, while referring to the semantic roles entailed by the predicates I follow Siewierska (2008:121) in using the term 'instigator' for the causal participant of an event the most broadly.

Apart from sharing some semantics, the verbs listed above can be identified as belonging to one class due to their participation in a particular set of syntactic alternations, which results in their use in the following three constructions.

1.1 The oblique place + oblique emitter construction

First, they are commonly used in a syntactic frame where the entity which emits the smell, sound, or light, or the entity which is the expanding aggregate or mass/abstract concept is expressed through an instrumental nominal or other oblique (a prepositional phrase). There is no overt lexical element realising a nominative subject, and the verb bears the 3SG.N inflection. This type of clause commonly includes an optional locative which is often topicalised. However, in this syntactic frame the instrumental or prepositional phrase expressing the emitter is also optional.

I refer to this syntactic frame as the 'oblique place + oblique emitter construction', even though I reserve judgement on the question of whether they are both arguments of the predicate, or whether the location might be an adjunct:[2]

(5) a. *W domu pachnie   kawą.*
       in house emit-fragrance.3SG.(N) coffee(F).INS
       'There is a smell of coffee in the house.'
    b. *Śmierdziało moczem   w całym korytarzu.*
       smelt.3SG.N urine(M).INS in whole corridor
       'There was a smell of urine in the whole corridor.'

(6) a. *Na forach grzmiało   od głosów   niezadowolenia.*
       on forums roared.3SG.N from voices(NONVIR)[3].GEN discontent(N).GEN
       '[Internet] forums were roaring with voices of discontent.'
    b. *W głowie szumiało   od   muzyki.*
       in head   throbbed.3SG.N from music(F).GEN
       'The [my/his/her] head was throbbing with music.'

(7) a. *Na ulicach mieniło   się   od świątecznych dekoracji.*
       on streets glistened.3SG.N REFL from festive.PL.GEN decorations(NONVIR).GEN
       'The streets glittered with festive decorations.'
    b. *W ogrodzie bieli   się   od szronu.*
       in garden   appear-white.3SG.(N) REFL from hoarfrost(M).GEN
       'The garden is glistening with hoarfrost.'

(8) a. *W ogrodzie roiło   się   od pszczół.*
       in garden   swarmed.3SG.N REFL from bees(NONVIR).GEN
       'The garden was swarming with bees.'
    b. *W głowach kipiało   nam   od pomysłów.*
       in heads   seethed.3SG.N us.DAT from ideas(NONVIR).GEN
       'Our heads were seething with ideas.'
    c. *W sercu pęczniało   od gniewu.*
       in heart swelled.3SG.N from anger(M).GEN
       'The [my/his/her] heart was swelling with anger.'

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[2] I also do not know at this stage whether they follow a particular ordering within the argument structure or not. This, however, should not have a bearing on the argumentation offered in this paper.

[3] I assume the following gender values for Polish: M (masculine), F (feminine), or N (neuter) in the singular, and VIR[ILE] (masculine human) or NONVIR[ILE] (all other, i.e. non-masculine human and all non-human) in the plural. This represents a simplified view of Polish gender in its interaction with number, but it is sufficient to describe the phenomena discussed in this paper.

This is a common construction in Polish and the naturally occurring clauses may display different word orders from the ones illustrated above, different collocations, and include additional lexical material. However, the reason why I selected the particular examples above for illustration is that they allow me to demonstrate the alternations available to these predicates with the minimum number of lexical elements and minimal pragmatic adjustments to improve their felicitousness.

1.2 The subject place + oblique emitter construction

The second syntactic frame in which these predicates can be found involves the location expressed via a nominative subject. The predicate agrees with the subject, while the entity which emits the smell, sound, or light, or the entity which is the expanding aggregate or mass/abstract concept is expressed through an instrumental nominal or other oblique (a prepositional phrase) as in (5)-(8). I will refer to this syntactic frame as the 'subject place + oblique emitter construction':[4]

(9) a. *Dom   pachnie   kawą.*
      house(M).NOM emit-fragrance.3SG.(M) coffee(F).INS
      'The house smells of coffee.'
   b. *Cały   korytarz   śmierdział   moczem.*
      whole.M.NOM corridor(M).NOM smelt.3SG.M urine(M).INS
      'The whole corridor smelt of urine.'

(10) a. *Fora   grzmiały   od głosów   niezadowolenia.*
       forums(NONVIR).NOM roared.3PL.NONVIR from voices(NONVIR).GEN discontent(N).GEN
       '[Internet] forums were roaring with voices of discontent.'
    b. *Głowa   szumiała   od muzyki.*
       head(F).NOM throbbed.3SG.F from music(F).GEN
       'The [my/his/her] head was throbbing with music.'

(11) a. *Ulice   mieniły   się od świątecznych dekoracji.*
       streets(NONVIR).NOM glistened.3PL.NONVIR REFL from festive.PL.GEN decorations(NONVIR).GEN
       'The streets glittered with festive decorations.'
    b. *Ogród   bieli   się od szronu.*
       garden(M).NOM appear-white.3SG.(M) REFL from hoarfrost(M).GEN
       'The garden is glistening with hoarfrost.'

(12) a. *Ogród   roił   się od pszczół.*
       garden(M).NOM swarmed.3SG.M REFL from bees(NONVIR).GEN
       'The garden was swarming with bees.'
    b. *Głowy   kipiały   nam od pomysłów.*
       heads(NONVIR).NOM seethed.3SG.NONVIR us.DAT from ideas(NONVIR).GEN
       'Our heads were seething with ideas.'
    c. *Serce   pęczniało   od gniewu.*
       heart(N).NOM swelled.3SG.N from anger(M).GEN
       'The [my/his/her] heart was swelling with anger.'

1.3 The subject emitter + oblique place construction

Finally, one more alternation available to these predicates, resulting in a third type of syntactic frame, has the entity which emits the smell, sound, or light, or the entity which is the expanding aggregate or mass/abstract concept expressed through a nominative subject. The predicate agrees with the subject, and – if felicitous – the location can be expressed as an optional locative:[5]

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[4] Dowty (2000) refers to the English variant of this construction as the 'Location-Subject Form', and notes that he adopts this term without implying a commitment to the term 'location' as a thematic role.
[5] Likewise, Dowty (2000) refers to the English variant of this construction as the 'Agent-Subject Form', also without implying a commitment to the term 'agent' as a thematic role.

(13) a. *Ta   kawa   pięknie   pachnie   w całym domu.*
    this coffee(F).NOM beautifully emit-fragrance.3SG.(F) in whole house
    'This coffee smells beautifully in the whole house.'

 b. *Mocz   śmierdział   w całym korytarzu.*
    urine(M).NOM smelt.3SG.M in whole corridor
    'The urine smelt in the whole corridor.'

(14) a. *Na forach grzmiały   głosy   niezadowolenia.*
    on forums roared.3PL.NONVIR voices(NONVIR).NOM discontent(N).GEN
    'On [internet] forums were roaring voices of discontent.'

 b. *Muzyka   szumiała   w głowie.*
    music(F).NOM throbbed.3SG.F in head
    'The music was throbbing in the [my/his/her] head.'

(15) a. *Na ulicach mieniły   się świąteczne   dekoracje.*
    on streets glistened.3PL.NONVIR REFL festive.NONVIR.NOM decorations(NONVIR).NOM
    'On the streets glittered festive decorations.'

 b. *Szron   bieli   się w ogrodzie.*
    hoarfrost(M).NOM appear-white.3SG.(M) REFL in garden
    'Hoarfrost is glistening in the garden.'

(16) a. *W ogrodzie roiły   się pszczoły.*
    in garden swarmed.3PL.NONVIR REFL bees(NONVIR).NOM
    'In the garden were swarming bees.'

 b. *W głowach kipiały   nam   pomysły.*
    in heads   seethed.3PL.NONVIR us.DAT ideas(NONVIR).NOM
    'In our heads were seething [new] ideas.'

 c. *Gniew   pęczniał   w sercu.*
    anger(M).NOM swelled.3SG.M in heart
    'Anger was swelling in the [my/his/her] heart.'

2   Modelling alternations at argument structure

I assume that the three constructions are related, that is, that they share the base verbal lexeme, and that the relations between the three variants of the lexeme are best captured at the level of argument structure. In the remainder of the paper, I provide argument structure models for all three of them.

A follow-up question pertinent to the first construction, the oblique place + oblique emitter one, is whether it is indeed impersonal as is often assumed. It evidently lacks a lexically expressed nominative subject, by which it fulfils a structural criterion of impersonality; and it defocuses the instigator, by which it fulfils the key functional criterion of impersonality (Siewierska 2008:116, 121-122). However, Polish is a *pro*-drop language, and applying these criteria to *pro*-drop languages can be tricky, as we would obviously not want to analyse all basic *pro*-drop clauses with omitted lexical (pronominal) subjects as impersonal.

In section 3 below I argue for a *pro*-drop analysis of the oblique place + oblique emitter construction. However, the sections immediately below prepare the ground by discussing the mechanism of variable participant-function mappings and by applying it to the class of verbs in question. In the process, I account first for the remaining two constructions: the subject place + oblique emitter one, and the subject emitter + oblique place one.

2.1 Participants competing for the same argument status

The subject place + oblique emitter construction (illustrated in 1.2) and the subject emitter + oblique place construction (illustrated in 1.3) as a pair bear close resemblance to many well documented pairs of clauses that exhibit alternative mappings of semantic participants to grammatical functions.

Many different types of such alternations have been identified where, holding constant both the (base of the) predicate and the participants selected for expression, there are two (and sometimes

more) ways of matching the same set of grammatical functions with the participants which are available for mapping. A common type of alternation involves two arguments within a verb phrase, either of which can be specified as an object (OBJ) or an oblique (OBL$_\theta$). An example is the locative alternation (see Levin 1993:49-55 for extensive references, and particularly Rappaport and Levin 1988, Pinker 1989, Jackendoff 1990, and Dowty 2000 for discussion of the different semantic contents of the English locative alternation variants). The example below is from Ackerman (1991; 1992) and Ackerman and Moore (2001) who used the locative alternation in their construction of a theory of mapping between semantic arguments and grammatical functions:

(17) a. *The peasant loaded*　　*(the) hay*　　*onto the wagon.*
　　　　　　　　　　　　　　OBJ　　　　　OBL$_\theta$

    b. *The peasant loaded*　　*the wagon*　　*with (the) hay.*
　　　　　　　　　　　　　　OBJ　　　　　OBL$_\theta$

Another type of alternation which results from the different possibilities of matching up the same sets of grammatical functions and participants is the so-called material-product alternation in English (Levin 1993:57). This alternation is even more relevant to the constructions discussed in this paper in that the set of grammatical functions in both types of alternation includes the subject, not just the arguments within the VP. Specifically, when the material-product alternation involves the intransitive variants of verbs such as *grow*, *develop*, *evolve*, *hatch*, and *mature*, both the raw material and product arguments may be expressed either as the subject or as the object of a preposition:

(18) a. *That acorn*　　*will grow*　　*into an oak tree.*
　　　　SUBJ　　　　　　　　　OBL$_\theta$

    b. *An oak tree*　　*will grow*　　*from that acorn.*
　　　　SUBJ　　　　　　　　　OBL$_\theta$

By analogy, pairs of clauses made up of the Polish subject place + oblique emitter construction and subject emitter + oblique place construction may be represented in the following way:

(19) a. *Dom*　　　　　　*pachnie*　　　　　　　*kawą.*　　　　　　　　cf. (9a)
　　　　house(M).NOM　　emit-fragrance.3SG.(M)　　coffee(F).INS
　　　　SUBJ　　　　　　　　　　　　　　　OBL$_\theta$

    b. *Ta kawa*　　　　　　*pachnie*　　　　　　　*w całym domu.*　　　cf. (13a)
　　　　this coffee(F).NOM　emit-fragrance.3SG.(F)　in whole.M.LOC house(M).LOC
　　　　SUBJ　　　　　　　　　　　　　　　OBL$_\theta$

(20) a. *Ogród*　　　　　*roił się*　　　　　　　*od pszczół.*　　　　　cf. (12a)
　　　　garden(M).NOM　swarmed.3SG.M REFL　from bees(NONVIR).GEN
　　　　SUBJ　　　　　　　　　　　　　　　OBL$_\theta$

    b. *Pszczoły*　　　　　*roiły się*　　　　　　　*w ogrodzie.*　　　　cf. (16a)
　　　　bees(NONVIR).NOM　swarmed.3PL.NONVIR REFL　in garden(M).LOC
　　　　SUBJ　　　　　　　　　　　　　　　　　OBL$_\theta$

Differences in the interpretation of the variants (such as the holistic vs partitive effect of the locative alternation) is regarded as evidence that the variants do not actually involve 'the same' predicates, but that they share the base lexeme and that the predicates are related to each other by some sort of lexical mechanism. However, it has not been clear whether it is possible to establish which variant is more basic, at least in English[6] – in this respect, they seem to have equal status, and

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[6] Pinker (1989) suggests that the verbs involved in the locative alternation may vary with regard to which member of the alternation is the conceptual core. Interestingly, other languages may favour a particular conceptualisation of events, as reported by Schaefer and Egbokhare (2009) for Emai (a West Benue-Congo language spoken in Nigeria) which is characterised by constraints on linear argument order and the virtual absence of argument alternations, allowing only verb constructions with Figure preceding Ground (cf. Talmy 2000).

formalisations of the alternations may be able to reflect this (as does the account of Markantonatou and Sadler 1996, who propose underspecified verb entries to account for some argument alternations).

2.2 Modelling the locative alternation with LMT

Modelling this type of alternation with textbook Lexical Mapping Theory (LMT) (e.g. Bresnan 2001: Chapter 14) is problematic. Taking the locative alternation in (17a,b) as an example, the most widely used versions of LMT would produce the following representations for the two variants, respectively:

(21) a. *load* ⟨ *ag   th   loc* ⟩   b. *load* ⟨ *ag   th   loc* ⟩
　　　　　　　[–o] [–r] [–o]　　　　　　　　　　　　　[–o]   ?   ?
　　　　　　　SUBJ OBJ OBL$_\theta$　　　　　　　　　　SUBJ OBL$_\theta$ OBJ

Kordoni (2003:259-260) discusses the difficulty which the alternation poses for the assignment of the syntactic pre-specifications [+/– r/o] to the arguments, and states the problem succinctly: 'the attempt to account for two different linkings to the respective grammatical functions from the same array of thematic roles clearly fails'.

Solutions to extending the capability of LMT that have been offered in the literature are twofold. First, it has been argued that the role of the hierarchy of thematic roles has to be reconsidered. The most widely used versions of LMT have a fixed hierarchy of thematic roles which determines the ordering of argument positions, as in (21a,b). However, there are many different hierarchies on offer (Newmeyer 2002 cites 18) and none of them appear to capture correctly all generalisations involving the realisation of arguments in terms of their semantic roles (Levin and Rappaport Hovav 2005: Chapter 6). Furthermore, Ackerman and Moore (2001:27) cite Gawron (1983) as a good general critique of the shortcomings associated with delimiting classes of verbs and identifying finite lists of discrete semantic roles.

Second, many authors have argued for the dissociation in the argument structure of the tier of semantic participants from the tier of syntactic argument positions, specifically to be able to account for morphosemantic operations on the predicate (e.g. Grimshaw 1988:1, T. Mohanan 1990/1994:15ff, Ackerman 1991:12; 1992:57ff, Joshi 1993, Alsina 1996:37, Ackerman and Moore 2001:40ff, Falk 2001:105).

Following these insights, I propose that the tier of semantic participants is distinct from the tier of valency slots. I follow Ackerman and Moore (after Dowty 1991) in assuming that *an argument of a predicate is a set of predicate entailments that is specific to a participant in the event denoted by the predicate*, that sets of proto-properties can be ordered from most proto-agentive to most proto-patientive, and that the linking of entailment sets to valency slots can be regulated by a well-formedness condition (2001:44-45).[7]

Furthermore, following Zaenen (1993:151) and Ackerman & Moore (2001:44ff), I argue that the point of reference which should remain constant in modelling argument structure is the *syntactic* representation of the predicate's valency rather than the *semantic* representation of the participants with which argument positions are linked. I assume that the following valency template is available to a base predicate:[8]

$$< \text{arg}_1 \quad \text{arg}_2 \quad \text{arg}_3 \quad \text{arg}_4 \quad ... \quad \text{arg}_n>$$
　　　　[–o/–r] [–r] [+o] [–o] 　　[–o]

Note that the pre-specification of the ordered valency slots corresponds to LFG's hierarchy of syntactic functions, but it is based on LMT's atomic values instead of final grammatical functions. As in all widely used models of LMT, the syntactic pre-specification of the arguments determines their availability for the mapping of particular grammatical functions. In order to retain the principle of monotonicity for the tractability of syntactic information (e.g. Bresnan 2001:45-46), I assume that the only mechanism that can intervene at the level of argument-to-function mapping is

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[7] Note, however, that the first suggestion of integrating Dowty's Proto-Role proposal into LMT came from Zaenen (1993). For an overview and discussion of her approach, see Butt (2006:135-138).

[8] Subscripts in this representation are only a memory aid, helping visualise and later recall the ranking of the argument slots. It is the linear order in the representation of the argument structure that gives us the ranking information, not the subscripts.

a mechanism of increasing markedness, but the primitives [+/– r/o] cannot be either changed or deleted.

Since argument positions are linked with particular types of predicate entailments corresponding to semantic participants, if the predicate does not have a particular set of entailments, the slot corresponding to that set of entailments is not invoked. Thus, for a particular predicate, the angled brackets contain all and only the selected valency slots for the arguments associated with that predicate, both core and non-core (arg_n [–o] indicates the availability of multiple non-core arguments), and there are no 'empty slots' in any particular predicate's argument structure.

Finally, I retain the widely accepted LMT 'Markedness Hierarchy of Syntactic Functions':

$$[–o]/[–r] \text{ SUBJ} > [–r]/[+o] \text{ OBJ}, [–o]/[+r] \text{ OBL}_\theta > [+o]/[+r] \text{ OBJ}_\theta$$
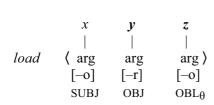
and use the following, revised, Mapping Principle for mapping argument structures to surface grammatical functions, based on the Markedness Hierarchy: 'The ordered arguments are mappped onto the highest (i.e. *least* marked) compatible function on the markedness hierarchy' (see Zaenen 1993:151 for a similar approach).

With the proposed model of LMT,[9] I arrive at the following representations for (17a,b). The referent of the semantic participant *y* is the 'hay', and the referent of the semantic participant *z* is the 'wagon'. In variant (22a), the role of 'hay' is more patient-like (we may call it a 'theme', for example) and therefore it maps onto the second argument position which is normally the syntactic slot for objects. In variant (22b), the role of 'wagon' is more patient-like (i.e. 'wagon' is conceptualised as the affected participant), and so it is 'wagon' which maps onto the second argument position where it is assigned the grammatical function of the object (unless the predicate undergoes passivisation, for example):
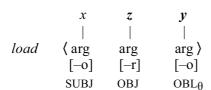
(22) a. *The peasant loaded   (the) hay   onto the wagon.*
                          OBJ   OBL$_\theta$

$$
\begin{array}{cccc}
 & x & y & z \\
 & | & | & | \\
load & \langle \text{ arg} & \text{arg} & \text{arg} \rangle \\
 & [-o] & [-r] & [-o] \\
 & \text{SUBJ} & \text{OBJ} & \text{OBL}_\theta
\end{array}
$$

   b. *The peasant loaded   the wagon   with (the) hay.*
                          OBJ   OBL$_\theta$

$$
\begin{array}{cccc}
 & x & z & y \\
 & | & | & | \\
load & \langle \text{arg} & \text{arg} & \text{arg} \rangle \\
 & [-o] & [-r] & [-o] \\
 & \text{SUBJ} & \text{OBJ} & \text{OBL}_\theta
\end{array}
$$

In other words, in (22a), the predicate (*load something on/into something*) entails an agent, theme, and location: *peasant* fulfills the semantic role of the agent, *hay* fulfills the semantic role of the theme, and *wagon* – of the location. In (22b), the predicate (*load something with something*) entails an agent, patient/affected entity, and instrument/theme/means (or whatever this last role is best called): *peasant* fulfills the semantic role of the agent, *wagon* fulfills the semantic role of the patient, and *hay* – of the instrument/theme/means. I have indicated that the two predicates are related by coding the participants with the same letters for both predicates. The variants result from the fact that two of the participants are capable of fitting slightly different roles in the two predicates.

Thus, as a result of the shift of perspective on semantic participants – from classifying them into discrete roles to seeing them as sets of semantic entailments of the predicate – it is now expected that the same semantic participants may align with the available argument positions in two

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[9] For more detailed argumentation in support of this model, see Kibort (2007) (and earlier versions of these ideas in 2001:14-19 and 2004:349-352).

(or more) different ways, as is exemplified by locative and other alternations. It is also expected that the semantic participants may 'change order' and re-associate with different argument positions for derived, morpho*semantically* altered, predicates.

Thus, even though there may be a default ordering of semantic participants, evidently it can be altered, *the alteration being driven by the change in the interpretation of the predicate together with its sets of entailments*. As was illustrated in (22), the most straightforward way to model this with LMT is to allow the same semantic participants to 'realign' and link to different argument positions for different types of clauses which may or may not differ in valency. Note, however, that although the ordering of the semantic participants is relaxed in this version of LMT (it is no longer fixed, because it does not depend on any fixed thematic hierarchy), the ordering of syntactic argument positions (i.e. the argument positions together with their syntactic pre-specifications) has to remain fixed, representing a presumably universal valency template available to a predicate.

Despite its more limited application, Kordoni (2003:262-263), following the LMT version of Zaenen (1993), offers a compatible solution for her analysis of the locative alternation in German: instead of following a hierarchy of thematic roles, she fixes the ordering of the argument positions and refers to them by 'conventional labels in the spirit of Zaenen (1993), such as *agent*, *patient* and *nonpatient*, [which] are used in order to indicate that the verb supports three arguments, each of which is associated with some general lexico-semantic entailments'. Consequently, the arguments receive their correct syntactic pre-specifications, but crucially they express different participants in the two variants: patient=locatum and nonpatient=location in the locative variant ('Peter filled water in the tank'), while patient=location and nonpatient=locatum/means in the 'with'-variant ('Peter filled the tank with water'):

(23) a. *Peter füllte   Wasser   in den Tank.*
                          OBJ OBL_θ

   füllen ⟨ agent   patient(locatum)   nonpatient(location) ⟩
              [–o]   [–r]   [–o]
              SUBJ   OBJ OBL_θ

   b. *Peter füllte   den Tank   mit Wasser.*
                          OBJ OBL_θ

   füllen ⟨ agent   patient(location)   nonpatient(locatum=means) ⟩
              [–o]   [–r]   [–o]
              SUBJ   OBJ OBL_θ

2.3 Modelling the emitter-place alternations with LMT

The Polish verbs in (1)-(4) denote events that typically involve two entities as participants. One is the entity which emits the smell, sound, or light, or the entity which is the expanding aggregate or mass/abstract concept. The other entity is the location in which the event takes place – that is, the location where the smell, sound, light, or aggregate/abstract concept is present and/or propagated.

For example, the verb *pachnieć* 'emit fragrance' typically involves two participants: the emitter of the fragrance (x), and a location (y). Two simple mapping options involving these two participants are:

(24) a. *pachnie*   *kawa*   *w domu*   cf. (19b)
         emit-fragrance.3SG.(F)   coffee(F).NOM   in house(M).LOC
                                       SUBJ OBL_{LOC}

                              x y
                               | |
         pachnieć ⟨ arg   arg   ⟩
                        [–r][10]   [–o]
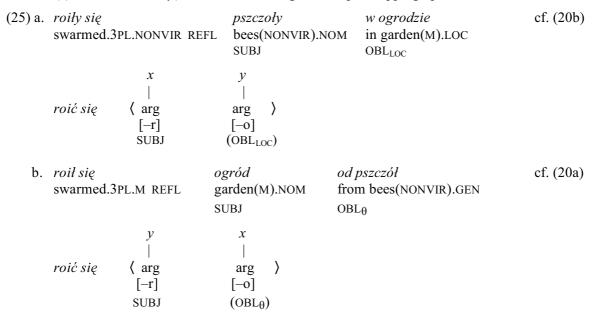   SUBJ (OBL_{LOC})

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[10] I assume that this verb is unaccusative, though nothing in the present discussion hinges on this assumption.

b. *pachnie*   *dom*   *kawą*   cf. (19a)
    emit-fragrance.3SG.(M)   house(M).NOM   coffee(F).INS
                        SUBJ   OBL$_{INS}$

$$\text{\textit{pachnieć}} \quad \langle \begin{array}{cc} y & x \\ | & | \\ \text{arg} & \text{arg} \\ [-r] & [-o] \\ \text{SUBJ} & (\text{OBL}_{INS}) \end{array} \rangle$$

In (24a), the predicate entails (in the sense of Dowty 1991, Ackerman and Moore 2001, Grimm 2007; see also Donohue and Donohue 2004 regarding instruments) an 'instigator/causer' participant which emits the fragrance, and an optional location. In (24b), the predicate entails an 'instigator/causer' participant which propagates the fragrance, and an optional oblique participant (a kind of 'instrument', or 'means' – this latter term is due to Kordoni 2003:262) with which the propagation is achieved. *Kawa* 'coffee' and *dom* 'house' can map in two different ways, because they can each fulfil two different semantic roles. One of the roles that both of them are capable of fulfilling is that of an 'instigator'.

    Similarly, the verb *roić się* 'swarm' typically involves two participants: the entity which swarms (*x*), and a location (*y*), with the following two simple mapping options:

(25) a. *roiły się*   *pszczoły*   *w ogrodzie*   cf. (20b)
        swarmed.3PL.NONVIR REFL   bees(NONVIR).NOM   in garden(M).LOC
                             SUBJ   OBL$_{LOC}$

$$\text{\textit{roić się}} \quad \langle \begin{array}{cc} x & y \\ | & | \\ \text{arg} & \text{arg} \\ [-r] & [-o] \\ \text{SUBJ} & (\text{OBL}_{LOC}) \end{array} \rangle$$

  b. *roił się*   *ogród*   *od pszczół*   cf. (20a)
        swarmed.3PL.M REFL   garden(M).NOM   from bees(NONVIR).GEN
                         SUBJ   OBL$_\theta$

$$\text{\textit{roić się}} \quad \langle \begin{array}{cc} y & x \\ | & | \\ \text{arg} & \text{arg} \\ [-r] & [-o] \\ \text{SUBJ} & (\text{OBL}_\theta) \end{array} \rangle$$

In (25a), the predicate entails an 'instigator' ('agentive', 'causal') participant, and an optional location. In (25b), the predicate entails an 'instigator' or 'causal' participant projecting the activity of swarming, and an optional oblique participant (a kind of 'instrument', or 'means') with which the activity is achieved. *Pszczoły* 'bees' and *ogród* 'garden' can map in two different ways, because they can each fulfil two different semantic roles. One of the roles that both of them are capable of fulfilling is that of an 'instigator'.

3   Identifying a 'dummy' instigator

In order to analyse the oblique place + oblique emitter construction in Polish (the one illustrated in section 1.1), I need to bring up more tools. I have already demonstrated that both the place and the emitter participants of the predicates under discussion can be conceptualised as having semantic roles which fit oblique argument functions – the functions of locative and instrumental/prepositional obliques, respectively. In the two constructions discussed in section 2, that was the end of the story. The resulting clauses are active and uncontroversially personal, with nominative subjects.

    The oblique place + oblique emitter construction presents an additional problem of having no overt subject, with the verb bearing what looks like the default non-agreeing inflection (3SG.N). In the following subsections I offer an analysis which involves identifying three rather than two

semantic participants for this construction, finding a *pro* (unexpressed/incorporated pronominal) syntactic subject, and establishing the identity of the subject by co-referring it with the argument expressing the emitter or the location.
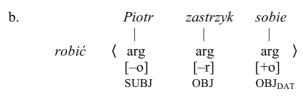
3.1 Distinguishing between semantic participants and referents

All predicates discussed in section 2 had different referents associated with each of the predicate's arguments. But, obviously, this may not always be the case. I use standard coindexing at the level of semantic participants to indicate their coreference. An example is *Piotr robi sobie zastrzyk* 'Peter is giving himself an injection', where the agent (subject) and the patient (object) co-refer:

(26) a. *Piotr   robi   sobie   zastrzyk.*
       Peter(M).NOM   make.3SG.(M)   self.DAT   injection(M).ACC
       'Peter gives/is giving himself an injection.'

    b.
$$
\begin{array}{cccc}
 & \textit{Piotr} & \textit{zastrzyk} & \textit{sobie} \\
 & | & | & | \\
\textit{robić} \quad \langle & \text{arg} & \text{arg} & \text{arg} \quad \rangle \\
 & [-o] & [-r] & [+o] \\
 & \text{SUBJ} & \text{OBJ} & \text{OBJ}_{\text{DAT}}
\end{array}
$$

    c.
$$
\begin{array}{cccc}
 & x_i & y & z_i \\
 & | & | & | \\
\textit{robić} \quad \langle & \text{arg} & \text{arg} & \text{arg} \quad \rangle \\
 & [-o] & [-r] & [+o] \\
 & \text{SUBJ} & \text{OBJ} & \text{OBJ}_{\text{DAT}}
\end{array}
$$

The LMT representation in (26) corresponds to diagrams found in traditional descriptive linguistic work on diathesis, such as Geniušienė's (1987), cited in Klaiman (1991:66):

(27)

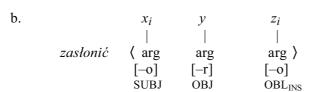| (i) 'Ordinary transitive diathesis'		(ii) 'Diathetical semantic reflexive'		(iii) 'Nondiathetical semantic reflexive'	
Person1	Person2	Person1		Person1	
Agent	Patient	Agent	Patient	Agent	Patient
Subject	Object	Subject		Subject	Object

Specifically, the 'Agent' and 'Patient' in Geniušienė's diagrams correspond to semantic participants in LMT, such as the x and y in example (26). When they co-refer, Geniušienė represents the referent as one 'Person'; otherwise they are represented as two distinct referents, 'Person1' and 'Person2'.[11]

An example of an instrument co-referring with an agent is found in sentences such as *Piotr zasłonił sobą słońce* 'Peter blocked/shaded the sun with himself':

(28) a. *Piotr   zasłonił   sobą   słońce.*
       Peter(M).NOM   blocked.3SG.M   self.INS   sun(N).ACC
       'Peter blocked/shaded the sun with himself.'

    b.
$$
\begin{array}{cccc}
 & x_i & y & z_i \\
 & | & | & | \\
\textit{zasłonić} \quad \langle & \text{arg} & \text{arg} & \text{arg} \quad \rangle \\
 & [-o] & [-r] & [-o] \\
 & \text{SUBJ} & \text{OBJ} & \text{OBL}_{\text{INS}}
\end{array}
$$

If three independent referents were associated with this predicate, as in *Piotr zasłonił słońce*

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[11] Note also that it is this distinction between 'referents' and 'semantic participants' that corresponds in some way to Jackendoff's functional representation of arguments at 'action tier' and the representation of their conceptual roles at 'thematic tier', respectively (1990:126ff).

parawanem 'Piotr blocked/shaded the sun with a screen', the representation would simply be:

(29) a. *Piotr   zasłonił   słońce   parawanem.*
Peter(M).NOM blocked.3SG.M sun(N).ACC screen(M).INS
'Peter blocked/shaded the sun with a screen.'

b.
$$
\begin{array}{cccc}
 & x & y & z \\
 & | & | & | \\
\textit{zasłonić} \quad \langle & \text{arg} & \text{arg} & \text{arg} \rangle \\
 & [-o] & [-r] & [-o] \\
 & \text{SUBJ} & \text{OBJ} & \text{OBL}_{\text{INS}}
\end{array}
$$

The sentence *Piotr zasłonił słońce* 'Peter blocked/shaded the sun' is obviously ambiguous with regard to whether the action is accomplished with Peter as the instrument causer, or with a distinct entity as an instrument used by Peter. If one wished to be explicit about the ambiguity, one could represent it as:

(30) a. *Piotr   zasłonił   słońce.*
Peter(M).NOM blocked.3SG.M sun(N).ACC
'Peter blocked/shaded the sun.'

b.
$$
\begin{array}{cccc}
 & x_i & y & (z_{i/j}) \\
 & | & | & \\
\textit{zasłonić} \quad \langle & \text{arg} & \text{arg} & \rangle \\
 & [-o] & [-r] & \\
 & \text{SUBJ} & \text{OBJ} &
\end{array}
$$

However, oblique participants/arguments are optional in Polish, and when they are not there, it is not due to any operation on argument structure that removes them, but they are simply not selected for expression. Therefore, we can also represent *Piotr zasłonił słońce* 'Peter blocked/shaded the sun' simply as:

(31) a. *Piotr   zasłonił   słońce.*
Peter(M).NOM blocked.3SG.M sun(N).ACC
'Peter blocked/shaded the sun.'

b.
$$
\begin{array}{ccc}
 & x & y \\
 & | & | \\
\textit{zasłonić} \quad \langle & \text{arg} & \text{arg} \rangle \\
 & [-o] & [-r] \\
 & \text{SUBJ} & \text{OBJ}
\end{array}
$$

To sum up, *zasłonić* 'block/shade/cover' entails three semantic participants: an agent, patient, and instrument/means, but it involves only two (rather than three) referents when the agent and the instrument co-refer.

3.2 *pro*-drop constructions in Polish

One more building block of analysis, necessary to account for the oblique place + oblique emitter construction in Polish (the one illustrated in section 1.1), involves a discussion of Polish *pro*-drop constructions.

The most familiar instances of *pro*-drop in Polish are clauses formed from a personal predicate with a dropped personal pronoun, such as sentence (32) 'He saw that the door was open and went in' occurring in the following context: 'Peter didn't waste his time: [he saw that the door was open and went in]'.

(32)   *Zobaczył, że drzwi są otwarte i   wszedł.*
saw.3SG.M that doors are open   and went-in.3SG.M
'[He/Someone/They] saw that the door was open and went in.'

Other familiar instances are clauses formed from personal predicates with a dropped indefinite pronoun, both the pronoun referring to humans, such as sentence (32) 'Someone/They saw that the

door was open and went in' occurring in the following context: 'Someone may have not had an intention to burgle, but [they saw that the door was open and went in]', and the pronoun referring to non-humans, as in the so-called 'weather constructions' exemplified in (33) and 'adversity impersonals' exemplified in (34):

(33)   *Wiało,   jakby chciało   powyrywać drzewa z   korzeniami.*
       blew.3SG.N as-if   wanted.3SG.N pull-out.INF trees   with roots
       '[It/Something] was blowing as if it wanted to pull out trees with their roots.'

(34)   *Rzuciło   go w bok.*
       threw.3SG.N him to side
       '[It/Something] threw him to the side.'

Contrary to tradition, predicates expressing weather phenomena and natural forces are now beginning to be recognised more widely as syntactically and/or morphologically personal in many languages in which weather verbs do not preclude the use of a lexical subject such as 'rain', 'wind', 'sky', 'universe/world/time' etc., and are capable of carrying corresponding inflection (e.g. all East Caucasian languages except Nakh – Daniel, Khalilova and Molochieva 2008; several Oceanic languages – Moyse-Faurie 2008; various Afroasiatic – Tosco and Mettouchi 2008; see also a 2008 discussion thread in lingtyp).

Even when they occur without a lexical subject, Polish weather clauses, adversity impersonals, and other apparently subjectless clauses involving verbs of physical or psychological states do not lack a syntactic subject. They can be analysed as a construction with an optionally unexpressed pronominal subject, where the understood subject is the indefinite pronoun referring to non-humans (*pro*INDEF).[12] As expected, this subject can be found to participate in syntactic control and raising – see, for example, (33) above; or *Wiało rzucając gałęziami* '[It/Something] was blowing, throwing branches'; *Zdawało się padać* '[It/Something] seemed to rain'; etc. A construction with a dropped indefinite pronoun subject does not present problems for LFG, as it falls under the standard analysis of unexpressed pronouns (e.g. Bresnan 2001:144-177).

The same line of argumentation, and the same LFG analysis, can be applied to the apparently subjectless Polish construction in 1.1 which uses the class of verbs including verbs of emission of smell, sound, or light, and verbs expressing expansion of an aggregate or a mass/abstract entity. The verbs themselves are obviously not impersonal, since they easily admit and commonly appear with an overt nominative subject, and fully agree with an overt subject's inflectional properties. This was demonstrated in sections 1.2 and 1.3 which showed alternative syntactic frames available for those verbs. There are also no morphosyntactic restrictions that would prevent these verbs from agreeing with a subject in a person other than third – that is, the predicates in question have a complete inflectional paradigm of personal verbs. Furthermore, any Polish verb that can express an event whose causer/instigator is *non-human* may occur with an *overt* indefinite pronoun (*coś* 'something') expressing the subject, for example: *coś pachnie/śmierdzi/szumi/huczy/mieni się/bieli się/roi się/kipi* etc. 'something emits fragrance/smells/hums/rumbles/glitters/glistens/teems/seethes' etc., also *coś mnie mdli/dusi/skręca* etc. 'something nauseates/chokes/convulses me' etc. When they occur without a lexical subject, the unexpressed *pro*INDEF subject is capable of syntactic control and raising – e.g. *Pachnie, jakby chciało cię omamić* '[It/Something] smells as if it wanted to charm you'; *W ogrodzie bieli się od szronu, przypominając o nadchodzącym Nowym Roku* 'In the garden [it/something] is glistening with hoarfrost, reminding about the up-coming New Year'; *Zdawało się roić od pszczół* '[It/Something] seemed to swarm with bees', etc.

I argue, therefore, that the oblique place + oblique emitter construction in Polish is only functionally impersonal, but it is not subjectless. It has a fairly ordinary syntactic subject which is the *pro*INDEF, which behaves syntactically like any other *pro* subject, and which can be given a standard syntactic analysis of an 'unexpressed/incorporated' pronoun or pronominal inflection.

3.3 The instigator in the oblique place + oblique emitter construction

The section finally explains the relevance of the distinction between semantic participants and referents for the analysis of the oblique place + oblique emitter construction in Polish, by bringing

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[12] For some more discussion of this construction in Polish see Kibort (2004:295-318) and (2006/2008a).

together the discussion from section 3.1 with the account of the syntactic subject of this construction in section 3.2.

In terms of grammatical functions, I have argued that the oblique place + oblique emitter construction in Polish (as exemplified in 1.1) has a syntactic *pro*_{INDEF} subject, and that the subject expresses an unspecified or undisclosed non-human instigator/causer of the denoted event. Apart from the subject, the construction may also have up to two oblique arguments, one expressing the entity which emits the smell, sound, or light, or the entity which is the expanding aggregate or mass/abstract concept, and the other expressing the location where the event takes place/is present/is propagated.

Therefore, in terms of semantic participants, the functionally impersonal variant of the predicate entails an unspecified instigator/causer, an optional instrument/means with which the activity of the instigator/causer is achieved, and an optional location. However, clauses are well-formed even if no arguments are lexically expressed (provided that the context ensures that they are felicitous), as is illustrated below in (35a-d) and (36a-d).

The following are proposed representations of the oblique place + oblique emitter construction. The unspecified instigator/causer participant (*z*), which does not have an independent referent, may co-refer with either the emitter (for which I have retained the label *x*) or the location (for which I have retained the label *y*). By coding the semantic participants in this construction with the same letters as in the other two constructions, I capture the way in which the predicates in all three constructions are related.

(35) a. *W domu pachnie   kawą.*   cf. (5a)
in house emit-fragrance.3SG.(N) coffee(F).INS
'There is a smell of coffee in the house.' [lit. '(It) smells of coffee in the house.']

b. *Ale   pachnie.*
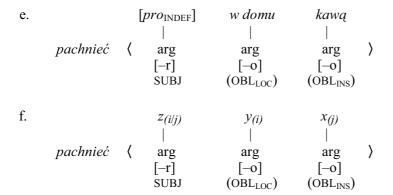how emit-fragrance.3SG.(N)
'What a fragrance!' [lit. 'How (it) emits fragrance.']

c. *Pachnie   w tym domu.*
emit-fragrance.3SG.(N) in this house
'There is a fragrance in this house.' [lit. '(It) emits fragrance in this house.']

d. *Pachnie   kawą.*
emit-fragrance.3SG.(N) coffee(F).INS
'There is a smell of coffee.' [lit. '(It) smells of coffee.']

e.   [*pro*_{INDEF}]   *w domu*   *kawą*
                                    | | |
          pachnieć ⟨   arg   arg   arg   ⟩
                             [–r]   [–o]   [–o]
                             SUBJ   (OBL_{LOC})   (OBL_{INS})

f. $z_{(i/j)}$ $y_{(i)}$ $x_{(j)}$
                                    | | |
          pachnieć ⟨   arg   arg   arg   ⟩
                             [–r]   [–o]   [–o]
                             SUBJ   (OBL_{LOC})   (OBL_{INS})

(36) a. *W ogrodzie bieli   się   od   szronu.*   cf. (7b)
in garder   appear-white.3SG.(N) REFL from hoarfrost(M).GEN
'The garden is glistening with hoarfrost.' [lit. '(It) glistens with hoarfrost in the garden.']

b. *Ale się   bieli.*
how REFL appear-white.3SG.(N)
'How it is glistening!' [lit. 'How (it) glistens.']

c. *Bieli   się   w ogrodzie.*
appear-white.3SG.(N) REFL in garden
'It is glistening in the garden.' [lit. '(It) glistens in the garden.']

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d. *Bieli   się   od   szronu.*
   appear-white.3SG.(N) REFL from hoarfrost(M).GEN
   'It is glistening with hoarfrost.' [lit. '(It) glistens with hoarfrost.']

e.
$$[pro_{INDEF}] \quad w\ ogrodzie \quad od\ szronu$$

$$bielić\ się \quad \langle \quad \underset{SUBJ}{\underset{[-r]}{arg}} \quad \underset{(OBL_{LOC})}{\underset{[-o]}{arg}} \quad \underset{(OBL_{\theta})}{\underset{[-o]}{arg}} \quad \rangle$$

f.
$$z_{(i/j)} \quad y_{(i)} \quad x_{(j)}$$

$$bielić\ się \quad \langle \quad \underset{SUBJ}{\underset{[-r]}{arg}} \quad \underset{(OBL_{LOC})}{\underset{[-o]}{arg}} \quad \underset{(OBL_{\theta})}{\underset{[-o]}{arg}} \quad \rangle$$

This completes the proposal of how to capture the linking between semantic participants and grammatical functions in the oblique place + oblique emitter construction, taking into consideration the interpretation of the participant roles and the morphosyntactic behaviour of the arguments present in this construction – in particular, the obligatory and syntactically active unexpressed pronominal subject, which contrasts with the implied and optionally lexicalised reflexive pronoun in (28) (cf. (30)). However, extending beyond LMT, there remains the technical question of how exactly to handle the coreference between a 'PRO' argument (the inflectionally expressed pro_{INDEF}) and another argument within a simple predicate despite their possible different featural specifications. I leave this issue up for further research, but just note that a sample solution for the coference of a nominal and reflexive elements bearing different featural specifications has been offered in HPSG by Trawiński (2007).

Note also that the pro_{INDEF} could be expressed overtly as *coś* 'something' in all sentences in (35) and (36). Its overt expression itself does not, however, resolve the ambiguity of its reference. Hence, sentences with the overt pro_{INDEF} would also have the representations in (35f) and (36f). It seems that the ambiguity of the reference of pro_{INDEF} can only be resolved with the help of additional linguistic material or extralinguistic context.

4   Intermediary agents in other pro_{INDEF}-drop constructions

The following is a summary view of the three different syntactic frames available for the class of Polish predicates discussed in the sections above, that is verbs of emission of smell, sound, or light, and verbs expressing expansion of an aggregate or a mass/abstract entity. I use *pachnieć* 'emit fragrance' as the example, and retain the coding of the semantic participants throughout as: x=emitter; y=location; and z=the unspecified instigator/causer. Note that this class of verbs is intransitive:

(37) a.
$$x \quad\quad y$$

$$pachnieć \quad \langle \quad \underset{SUBJ}{\underset{[-r]}{arg}} \quad \underset{(OBL_{LOC})}{\underset{[-o]}{arg}} \quad \rangle$$

b.
$$y \quad\quad x$$

$$pachnieć \quad \langle \quad \underset{SUBJ}{\underset{[-r]}{arg}} \quad \underset{(OBL_{INS})}{\underset{[-o]}{arg}} \quad \rangle$$

c.
$$z_{(i/j)} \quad y_{(i)} \quad x_{(j)}$$

$$pachnieć \quad \langle \quad \underset{SUBJ}{\underset{[-r]}{arg}} \quad \underset{(OBL_{LOC})}{\underset{[-o]}{arg}} \quad \underset{(OBL_{INS})}{\underset{[-o]}{arg}} \quad \rangle$$

An analogous LMT analysis can be applied to two more classes of predicates in Polish, most of which are typically used transitively: predicates denoting some physical or psychological states, and predicates used in the so-called 'adversity impersonal' construction. I discuss them briefly in the following subsections.

4.1 Intermediary agents co-occurring with experiencers

Polish verbs denoting various physical or psychological states typically entail an experiencer participant and an (optional) stimulus participant:

(38) *Mdli/Dusi/Skręca/Ciągnie/Boli/Swędzi/Kłuje   mnie.*
nauseate/choke/convulse/pull/ache/itch/stab.3SG.(N) me.ACC
'[Something] makes me nauseous/choke/convulse/contract my muscles/ache/itch/gives me shooting pains.'

All of these verbs typically appear with an experiencer marked for accusative case. However, they also frequently collocate with a particular oblique expression of the stimulus, for example:

(39) a. *Mdli/Dusi/Skręca   mnie   od tego zapachu.*
nauseate/choke/convulse.3SG.(N) me.ACC from this   smell
'This smell makes me nauseous/choke/convulse.' [lit. '(It) makes me nauseous/choke/convulse from this smell.'

   b. *Mdli/Dusi/Skręca   mnie   z   bólu/zazdrości.*
nauseate/choke/convulse.3SG.(N) me.ACC from pain/envy
'The pain/envy makes me nauseous/choke/convulse.' [lit. '(It) makes me nauseous/choke/convulse from pain/envy.'

This construction in Slavonic has frequently been regarded as impersonal (e.g. Franks 1995:70ff; Babby 1998:6ff; Nagórko 1998:266; Saloni and Świdziński 1998:150; Śpiewak 2000:169). However, contrary to the common assumption that these predicates do not accept a nominative subject, in modern Polish their morphosyntax does not disallow it. Furthermore, the verbs have a full personal paradigm. Consider the following examples:

(40) a. *Wszystkie   zapachy   mnie   mdliły.*
all.NONVIR.NOM smells(NONVIR).NOM me.ACC nauseated.3PL.NONVIR
Nawet zapach   kawy   mnie   mdlił.
even   smell(M).NOM coffee(F).GEN me.ACC nauseated.3SG.M
'All smells made me nauseous. Even the smell of coffee made me nauseous.'

   b. *Ból   skręcał   mnie   niemiłosiernie.*
pain(M).NOM convulsed.3SG.M me.ACC mercilessly
'The pain convulsed me mercilessly.'

   c. *Bolała/Swędziała mnie   głowa.*
ached/itched.3SG.F me.ACC head(F).NOM
'My head ached/itched.'

   d. *Coś   mnie   dusi.*
something(N).NOM me.ACC choke.3SG.(N)
'Something makes me choke.'

   e. *Dusiły   mnie   te   zapachy.*
choked.3PL.NONVIR me.ACC these.NONVIR.NOM smells(NONVIR).NOM
'Those smells made me choke.'

I offer the following LMT representations for the two syntactic frames available to these predicates. I use the verb *mdlić* 'nauseate' as an illustration and code its semantic participants throughout as: x=stimulus; v=experiencer; z=the unspecified instigator/causer. The first syntactic frame, in (41), models the second clause in example (40a):

(41) a.   *zapach*   *mnie*   cf. (40a)

$$\textit{mdlić} \quad \langle \quad \underset{\substack{[-r]\\ \text{SUBJ}}}{\text{arg}} \quad \underset{\substack{[-r]^{13}\\ \text{OBJ}}}{\text{arg}} \quad \rangle$$

b.   *x*   *v*

$$\textit{mdlić} \quad \langle \quad \underset{\substack{[-r]\\ \text{SUBJ}}}{\text{arg}} \quad \underset{\substack{[-r]\\ \text{OBJ}}}{\text{arg}} \quad \rangle$$

And the following syntactic frame models examples (38) and (39a):

(42) a.   [*pro*$_{\text{INDEF}}$]   *mnie*   *od zapachu*

$$\textit{mdlić} \quad \langle \quad \underset{\substack{[-r]\\ \text{SUBJ}}}{\text{arg}} \quad \underset{\substack{[-r]\\ \text{OBJ}}}{\text{arg}} \quad \underset{\substack{[-o]\\ (\text{OBL}_\theta)}}{\text{arg}} \quad \rangle$$

b.   *z$_{(i)}$*   *v*   *x$_{(i)}$*

$$\textit{mdlić} \quad \langle \quad \underset{\substack{[-r]\\ \text{SUBJ}}}{\text{arg}} \quad \underset{\substack{[-r]\\ \text{OBJ}}}{\text{arg}} \quad \underset{\substack{[-o]\\ (\text{OBL}_\theta)}}{\text{arg}} \quad \rangle$$

4.2 Intermediary agents co-occurring with patients

Finally, the so-called 'adversity impersonals' can be exemplified in Polish by the following sentences:

(43) a. *Zasypało*   *drogę.*
       covered.3SG.N   road(F).ACC
       'The road got covered (with snow or sand).' [lit. '(It) covered the road.']

     b. *Zasnuło*   *las.*
       enveiled.3SG.N   forest(M).ACC
       'The forest got enveiled (with fog or smoke).' [lit. '(It) enveiled the forest.']

     c. *Biło*   *człowieka*   *w*   *twarz.*
       beat.3SG.N   man(M).ACC into face
       'One was beaten in the face (by rain/sleet/hail).' [lit. '(It) beat one in the face.']

Apart from typically appearing with a patient which is expressed through a direct object, adversity impersonals may also include an instrumental argument which is commonly interpreted as denoting the 'cause' (Wierzbicka 1966, Doros 1975, Siewierska 1988):

(44) a. *Zasypało*   *drogę*   *śniegiem.*
       covered.3SG.N   road(F).ACC snow(M).INS
       'The road got covered with snow.' [lit. '(It) covered the road with snow.']

     b. *Las*   *zasnuło*   *mgłą.*
       forest(M).ACC enveiled.3SG.N fog(F).INS
       'The forest got enveiled with fog.' [lit. '(It) enveiled the forest with fog.']

     c. *Biło*   *deszczem*   *w*   *twarz.*
       beat.3SG.N   rain(M).INS into   face
       'The rain beat one/you in the face.' [lit. '(It) beat in the face with rain.']

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[13] Note that the proposed variant of LMT does not need to resort to the 'Asymmetrical Object Parameter' (Alsina and Mchombo 1988) which regulates the occurrence of argument structures with two unrestricted [−r] arguments. See Kibort (2008b) for references and discussion.

This construction has also frequently been regarded as impersonal (e.g. Wierzbicka 1966 and Wlodarczyk 1993 for Polish; or Mel'čuk 1979 for a cognate Russian construction). However, like the other constructions discussed in this paper, this one also happily accepts a nominative causer/instigator. First, we find clauses corresponding to the ones in (44) where the same 'cause' participant is expressed through a nominative subject rather than an instrumental argument:

(45) a. *Śnieg   zasypał   drogę.*
      snow(M).NOM covered.3SG.M road(F).ACC
      'Snow covered the road.'

   b. *Mgła   zasnuła   las.*
      fog(F).NOM enveiled.3SG.F forest(M).ACC
      'Fog enveiled the forest.'

   c. *Deszcz   bił   w   twarz.*
      rain(M).NOM beat.3SG.M into face
      'The rain beat one/you in the face.'

And second, we find clauses corresponding to the ones in (44) where the 'cause' participant remains expressed through an instrumental argument, but additionally there is a nominative subject denoting a natural force (or exceptionally an agent). Its referent is different from the instrumental nominal; it is interpreted as the actual (rather than unspecified or unidentified) instigator of the event which uses the participant expressed through the instrumental as its instrument or means:

(46) a. *Huragan   zasypał   drogę   śniegiem.*
      storm(M).NOM covered.3SG.M road(F).ACC snow(M).INS
      'The storm covered the road with snow.'

   b. *Niewidzialna ręka   zasnuła   las   mgłą.*
      invisible.F.NOM hand(F).NOM enveiled.3SG.F forest(M).ACC fog(F).INS
      'An invisible hand enveiled the forest with fog.'

   c. *Wichura   biła   deszczem   w   twarz.*
      strong-wind.(F).NOM beat.3SG.F rain(M).INS into face
      'The strong wind beat one/you with rain in the face.'

Siewierska (1988:276) remarks that the construction in (44), which contains both an accusative argument and an instrumental one, bears a striking resemblance to the passive. Ss it could be seen to be derived from the construction in (46), it has been classified by some linguists as passive. However, both (45) and (46) have their legitimate and morphologically regular passives, as in (47) and (48), respectively:

(47) a. *Droga   zostala   zasypana   przez śnieg.*
      road(F).NOM became.3SG.F covered.PART.SG.F by   snow
      'The road got covered with snow.'

   b. *Las   zostal   zasnuty   przez mglę.*
      forest(M).NOM became.3SG.M enveiled.PART.SG.M by   fog
      'Fog enveiled the forest.'

   c. *Człowiek   był   bity   w   twarz przez deszcz.*
      man(M).NOM was.3SG.M beat.PART.SG.M into face   by   rain
      'One was beaten in the face by the rain.'

(48) a. *Droga   zostala   całkowicie zasypana   śniegiem   przez huragan.*
      road(F).NOM became.3SG.F completely covered.PART.SG.F snow(M).INS by   storm
      'The road got completely covered with snow by the storm.'

   b. *Las   zostal   zasnuty   mglą   jakby przez niewidzialną rękę.*
      forest(M).NOM became.3SG.M enveiled.PART.SG.M fog(F).INS as-if by   invisible   hand
      'The forest got enveiled with fog as if by an invisible hand.'

   c. *Człowiek   był   dosłownie bity   deszczem   w   twarz przez tę wichurę.*
      man(M).NOM was.3SG.M literally   beat.PART.SG.M rain(M).INS into face   by this strong-wind
      'One was literally beaten in the face with the rain by this strong wind.'

Instead of a passive analysis of the construction in (43) and (44), I suggest that it should instead be analysed in the way analogous to the other constructions discussed in this paper. Namely, I suggest that the predicates in (43)-(44) involve an unspecified instigator/causer, a patient, and an instrument.

I offer the following LMT representations for the three syntactic frames available to the predicates which are found in 'adversity impersonals'. I use the verb *zasypać* 'cover [by spilling/pouring a grainy substance]' as an illustration and code its semantic participants throughout as: z=instigator/causer/agent, v=patient, x=instrument/means/theme. The first syntactic frame, in (49), models the examples in (45):

(49) a. *śnieg*   *drogę*   cf. (45a)
           | |
   zasypać ⟨ arg   arg   ⟩
                [−o]   [−r]
                SUBJ   OBJ

   b. z_i v x_i
              | |
   zasypać ⟨ arg   arg   ⟩
                [−o]   [−r]
                SUBJ   OBJ

The following syntactic frame models the examples in (46):

(50) a. *huragan* *drogę* *śniegiem*   cf. (46a)
            | | |
   zasypać ⟨   arg   arg   arg   ⟩
                 [−o]   [−r]   [−o]
                 SUBJ   OBJ   (OBL$_{INS}$)

   b. z v x
              | | |
   zasypać ⟨   arg   arg   arg   ⟩
                 [−o]   [−r]   [−o]
                 SUBJ   OBJ   (OBL$_{INS}$)

And, finally, the following syntactic frame models the examples in (43)-(44):

(50) a. [*pro*$_{INDEF}$] *drogę* *śniegiem*   cf. (44a)
             | | |
   zasypać ⟨   arg   arg   arg   ⟩
                 [−o]   [−r]   [−o]
                 SUBJ   OBJ   (OBL$_{INS}$)

   b. $z_{i/j}$ v x_j
              | | |
   zasypać ⟨   arg   arg   arg   ⟩
                 [−o]   [−r]   [−o]
           SUBJ   OBJ   (OBL$_{INS}$)

5   Summary

In the sections above I propose an analysis of the morphosyntax of Polish clauses with verbs of emission, SWARM verbs, verbs expressing physical or psychological states due to a stimulus which can be interpreted as an intermediary agent, and verbs which are used in the so-called 'adversity impersonal' construction. I show the full range or possible participant-function mappings available for these classes of verbs and offer argument structure analyses for all the patterns of mapping. In order to do this, I have to extend the existing accounts of both the variable syntactic expression of semantic participants (in particular, the oblique-subject alternation), and *pro*-drop.

In particular, in order to model the fact that the same base predicate may have two (or more) options of matching its participants with grammatical functions without undergoing any morphosyntactic operations such as passivisation, I use a representation of argument structure in which the tier of semantic participants is dissociated from the tier of argument positions. Furthermore, in order to model the argument structure of nominativeless Polish clauses involving the predicates in question, I demonstrate that they are not impersonal and identify their subject as expressing a 'dummy' (unidentified) instigator/causer which may co-refer with an instrument or other oblique semantic participant. In this way, the paper brings together two phenomena which are usually treated independently: the oblique-subject alternation and *pro*-drop.

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