

Silverstein's Hierarchy and Polish argument structure

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Abstract

The paper focuses on the morpheme *-n/t-* in Polish, as employed in three types of constructions: (i) Periphrastic Passive; (ii) Nominalization, and (iii) so-called Impersonal Passive. These various argument structure configurations display various referential restrictions on the external argument, corresponding to various levels on Silverstein's Hierarchy. I argue that these restrictions stem from the way nominal functional sequence relates to the verbal one. Specifically, arguments are taken to undergo Peeling, and the particular degrees of their structural deficiency (cf. Cardinaletti and Starke (1999)) correspond to features on Silverstein's Hierarchy. The argument is substantiated by subjecthood tests and morphological considerations embedded in the *Layered Case Hypothesis*. Some differences between the Peeling system and the selection-based system are considered. Finally, the multifunctionality of the morpheme in question stems from the flexible mechanism of lexical insertion, governed by *The Superset Principle*. The morpheme is the spell out of default values of functional projections, which enables lexicalization of the complement. In this kind of system, the emerging scalar effects are epiphenomenal in nature: they arise as a result of the standard procedures relevant for the workings of the computational system, with the empirical complexity residing in the fine-grained universal functional sequence.

1. Background assumptions

The fundamental underlying assumption building on Cinque (1999) (and subsequent work) is the existence of a very elaborate and fine-grained hierarchy of functional projections, henceforth referred to as f_{seq} . The shape of the latter is assumed to be imposed by Universal Grammar. The ultimate research agenda is that each of the functional projections contributes only one syntactico-semantic feature. Crucially, however, syntactic heads do not come in various 'flavours'. This type of fine-grained decomposition juxtaposed with the necessarily restricted morphological inventory (both on an intra-language, as well as universal level) might potentially lead to two types of corollaries.

Either we are dealing with an extremely widespread zero morphology, or else morphophonological exponents must be allowed to spell out structures bigger than syntactic terminals. For space reasons I cannot possibly justify the choice between these two options, but it seems that zero morphology leads to serious selection problems, which in turn yields an unrestricted system (cf. Jabłońska (2007)). Therefore, following the idea of Michal Starke, I will assume that morphemes can essentially be ‘idioms’ in the lexicon in the sense that they are lexically specified to spell out various subsequences of f_{seq} . Differently from the Distributed Morphology central assumption, however, (cf. Halle and Marantz (1993)) the principle responsible for lexical insertion, i.e. matching ready lexical items against the syntactic derivations, is *The Superset Principle* (cf. also Caha (2007) and *lavish insertion* in Jabłońska (2007)).

- (1) **Lexical Insertion:** a morphological exponent is matched against a syntactic tree and inserted for a subsequence of f_{seq} iff it is specified for an identical hierarchy of features or a superset thereof.

The consequence of (1) is a flexible nature of morphemes, which can and often do compromise their lexical specification, i.e. are inserted to spell out a subset of their full lexical specifications. This point will become crucial in what follows, as it naturally accounts for the apparent ‘polysemy’ (or rather, ‘multifunctionality’) of functional vocabulary items. For the sake of completeness I just mention that (1) is restricted to only one part of the bifurcated lexicon (i.e. functional vocabulary). The other part, i.e. roots, as conceptually complex as they might be, do not participate in the syntactic computation at all (cf. e.g. Borer’s (2005) notion of Lexical Domain).

The second important assumption relates to the algorithm of mapping between the verbal and nominal functional sequences. Building on Cardinaletti and Starke (1999) and Starke’s subsequent unpublished work, I propose (2).

- (2) **Argument Peeling:** an external argument can be introduced as oblique low in the light verb system and subsequently lose its particular Case layers by being subextracted to higher functional projections in the verbal f_{seq} .

Observe that (2) is only one of the two options: the other option is to introduce an external argument directly in the high A-position (i.e. directly in the Nominative Case).¹ Peeling and the related property of an external argument being

¹Some languages might not make use of that option at all, e.g. purely ergative languages

able to occupy various levels in the verbal f_{seq} has two major consequences. Firstly, the higher position an external argument occupies, the more subject-like it will be. Secondly, the higher position it occupies, the more structurally deficient it will be. The former point will be elaborated on in section 2.3, whereas I turn to the latter point directly.

2. Polish *-n/-t-* and the Silverstein's Hierarchy

2.1. The nominal f_{seq}

The question that arises is how the relevant structural deficiency is manifested syntactically or morphologically. On the syntactic side, the answer to this question will depend on what kind of syntactico-semantic content is proposed for the relevant projections. E.g., compare two nominal arguments X and Y with the respective functional sequences in (3):

- (3) a. X: [F₃P [F₂P [F₁P]]]]
 b. Y: [F₂P [F₁P]]

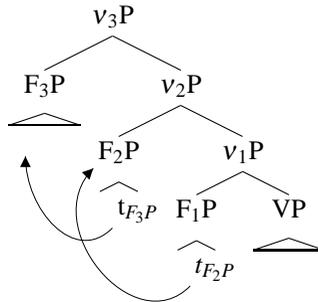
It is clear that Y, which lacks the highest functional projection, will also lack the semantics corresponding to them. What this semantics boils down to is a delicate question that most probably cuts across the traditional divisions into thematic roles (cf. e.g. features like 'sentience', 'mental state' or 'volitionality' recurring in the literature, e.g. Rozwadowska (1992), Reinhart (2002)). Yet, I propose that the overt manifestation of these features corresponds pretty closely to the so-called Silverstein's Hierarchy (cf. (4) adapted from Silverstein (1976, 122)), where the hierarchy of features creates an implicational scale associated with referential properties of (pro)nouns.

- (4) [F₅P Participant [F₄P Pronoun [F₃ Human [F₂P Animate [F₁P Noun]]]]]]

In this kind of system, where each projection adds just one feature, the implicational hierarchy falls out naturally from the way the noun is built. So far, however, we deal with a system à la Sportiche (1996), where the most referentially restricted or discourse-related noun phrases are the most

structurally ‘rich’.² There is one important morphological property, however, which seems to suggest that an argument must undergo reversal when merged in the verbal f_{seq} (i.e. Peeling must take place). To wit, there is a certain intuitively clear notion of (morpho)phonological markedness, whereby pronouns involve less phonological material than inanimate nouns. Therefore, an abstract Peeling scenario involving only three nominal heads from (4): $[F_3P [F_2P [F_1P]]]$ looks as in (5).³

(5)



Given that the order of features in the verbal f_{seq} is the reverse of the order of features in the nominal one, subsequent subextractions can only target the sister of the highest Specifier, i.e. shells must be peeled gradually.

Coming back to the syntactic manifestation of the different positions for the external argument, given the system in (5) and the semantics of particular projections in the nominal f_{seq} , a prediction arises to the effect that the higher position an external argument occupies, the more referentially restricted it will be. Let us now turn to the specific set of data from Polish and examine how the system fares.

²See e.g. Richards (2008) in the present volume, where the feature [+/-Person] implies the existence of the D-layer - an assumption reverse to the present one.

³This particular subscripting has the negative effect that the noun seems to be build in a top-down fashion, i.e. the more specific features are more deeply embedded, but the positive one that the subscripts in the verbal f_{seq} match those in the nominal one, this way reflecting feature-matching.

2.2. Referential restrictions on the external argument

Polish has a certain morpheme which is used in at least three different constructions⁴:

- **Periphrastic Passive (PP)** (similar to the standard English-like Passive with the surface subject in Nominative case, the participle agreeing with the subject for Gender and Number, and the Auxiliary), illustrated in (6a).
- **Impersonal Passive (IP)** - a somewhat quirky construction retaining Accusative case on the object, prohibiting the use of Auxiliary and requiring Past interpretation, allowing all sorts of verbs (including some Modals), except for a class of 'unaccusative' verbs, illustrated in (6b).
- **Nominalization (NO)** - the so-called *nomina deverbalia* productively formed from a great majority of verbs⁵ except for a class of 'unaccusative' verbs and some Modals, illustrated in (6c)⁶.

- | | | | |
|-----|----|--|------|
| (6) | a. | Książki zostały prze-czyt-a-n-e . | (PP) |
| | | books _{NOM} became _{3non.vir} pref-read-Th-n-non.vir | |
| | | 'The books have been read.' | |
| | b. | Prze-czyt-a-n-o książki. | (IP) |
| | | pref-read-Th-n-o books _{ACC} | |
| | | 'Someone (has) read the books.' | |
| | c. | prze-czyt-a-n-ie książek | (NO) |
| | | pref-read-Th-n-ie books _{GEN} | |
| | | 'having read the books' | |

The need for a unified analysis of the relevant morpheme boldfaced in (6) is substantiated by identical allomorphy: the morpheme has three allomorphs

⁴In fact, the uses discussed in the present article are only half of the actual uses of the relevant morpheme, but the range of uses is restricted by the topic of this volume.

⁵This is really a traditional way of putting things. In fact, I argue that these nominalization are *not* derived from verbs strictly speaking.

⁶To remain as theory-neutral as possible, I gloss the morpheme under discussion as -n-. Other abbreviations used in the paper are: ACC-Accusative, NOM-Nominative, GEN-Genitive, INSTR-Instrumental, f-feminine, inf-infinitive, m-masculine, neg-negation, neut-neuter, non.vir-non virile, pl-plural, poss-possessive, pr-present, pref-prefix, prt-participle, pst-past, refl-reflexive, sg-singular, SI-Secondary Imperfective, Th-thematic vowel/suffix.

the choice of which is determined by the conjugation class (roughly determined by the Theme). As shown in (7), the choice of the allomorph does not vary depending on the construction:

Table 1: Identical allomorphy

root	gloss	PP	IP	NOM
<i>rob</i>	'do, make'	<i>rob-i-on-y</i>	<i>rob-i-on-o</i>	<i>rob-i-en-ie</i>
<i>pis</i>	'write'	<i>pis-a-n-y</i>	<i>pis-a-n-o</i>	<i>pis-a-n-ie</i>
<i>bi(j)</i>	'beat'	<i>bi-t-y</i>	<i>bi-t-o</i>	<i>bi-c-ie</i>

All the three constructions imply the existence of an Agent (or Holder of State, in the case of stative verbs). Yet, they differ in at least one crucial respect: the possibility to express overtly and the ways to encode the Agent/Holder-of-State of the event denoted by the corresponding verb⁷. I illustrate the point of variation in (7):

- (7) a. Drzewo zostało obal-Ø-on-e przez
 tree_{NOM.neut} become_{pst.3sg.neut} bring.down-Th-n-sg.neut by
 wiatr/ żołnierzy/ ciebie.
 wind_{ACC}/ soldiers_{ACC}/ you_{ACC}
 'The tree has been brought down by the wind/ soldiers/ you.'
- b. Obal-Ø-on-o drzewo (*przez wiatr/ ludzi/
 bring.down-Th-n-o tree_{ACC} (*by wind_{ACC}/ people_{ACC}/
 ciebie).
 you_{ACC})
 'Someone/ some people (have) brought down the tree.'
- c. obal-Ø-en-ie drzewa przez wiatr/ Marka/ ciebie
 bring.down-Th-n-ie tree_{GEN} by wind_{ACC}/ Marek_{ACC}/ you_{ACC}
 'bringing down the tree by the wind/ Marek/ you'
- d. (moje/ twoje/ jego/ Marka/ (?)drwala/ *dzika/
 (my/ your/ his/ Marek_{GEN}/ carpenter_{GEN}/ bore_{GEN}/
 *wiatru) ciągle obal-Ø-a-n-ie drzewa
 wind_{GEN} constant bring.down-Th-SI-n-ie trees
 '(my/ your/ his/ Marek's/ (?)carpenter's/ *bore's/ *wind's) bring-
 ing down trees'

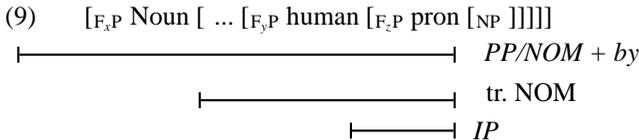
⁷I should pinpoint that at least NO allows for non-eventive readings as well. As these are not relevant for the topic of this volume, I leave them aside.

The points to note about (7) are as follows: (i) PP allows all sorts of optional oblique Agents expressed in a PP headed by *przez* ('by, through') and a noun in Accusative case; (ii) IM disallows any kind of overt expression of an Agent, irrespective of its referential properties, but interpretation-wise the implied Agent is necessarily referring to human beings; (iii) NO surfaces in two instantiations: either an Agent is expressed in a *przez*-phrase, identically to the PP, or else an Agent is encoded as a prenominal noun in Genitive case. I will refer to the latter as a transitive NO. Crucially, the Agent in a *przez*-phrase is semantically unrestricted. The prenominal Genitive Agent, on the other hand, allows pronouns (both local and non-local person), as well as Proper nouns, but is for many speakers deviant with non-human nouns, whether animate or inanimate.

That these kinds of semantic restrictions on the denotation of external arguments are categorical is confirmed by two types of coercion. Firstly, whenever a verb is normally predicated of entities incompatible with the featural specification required in IP, the predicate is interpreted metaphorically, but still with the relevant referential restriction (cf. (8a)). On the other hand, in the transitive NO with two Genitive NPs the usual denotation of an argument will be coerced, whenever incompatible with the referential restriction, just to preserve the Agent interpretation in the prenominal position (cf. (8b)). The latter recalls a characteristic feature of A-movement, i.e. order preservation.

- (8) a. Ujad-a-n-o/ Szczek-a-n-o na niego.
 yap-Th-n-o/ bark-Th-n-o at him
 'People have been yapping/ barking at him.'
- b. rządu ciągle oszuk-iwa-n-ie obywateli
 government_{GEN} constant cheat-SI-n-ie citizens_{GEN}
 'the government's constant cheating of the citizens'
 '*the citizens' constant cheating the government'

The ranges of acceptable denotations of Agents in (7) are shown in (9):



This region in the nominal f_{seq} is sometimes referred to as KP (cf. e.g. Bittner and Hale (1996)). Somewhat prematurely I assume in (9) that the external argument in the Impersonal Passive is arbitrary pro (pro_{arb}). The evidence for

this particular point will be provided in the next section. There is one problem with (9), however. In the Peeling system, where each of those three different ways of encoding an external argument corresponds to a different level of structural deficiency, the prediction arises that only a given level of referential restrictions would be allowed in a particular construction, e.g. only human NPs in a transitive nominalization⁸. This, however, is not the case, as the implicational relations are preserved, e.g. in (7a) pronouns are also allowed, and similarly in the transitive nominalization in (7d). There are two types of complications that enter the picture here. Firstly, an additional quirk in (7d) is that the local person pronouns in prenominal position are not nouns in Genitive case, but rather simple adjectival forms that agree with the NO for Gender and Number (cf. *mnie* ('me_{GEN}') vs *mój* ('my_{sg.m}') and *ciebie* ('you_{GEN}') vs *twój* ('your_{sg.m}'). The non-local (i.e. 3 Person) pronoun is ambiguous (or syncretic) between the adjectival and the genitival form (compare *jego noga* ('his leg') and *jego tu nie ma* ('he_{GEN} is not here')). Therefore, I suggest that the adjectival forms do not undergo any peeling from a Θ -position, but instead are merged directly in the Specifier of some high functional projection of the nominalization.⁹

Finally, coming back to the (morpho)phonological manifestation of Peeling, it is also evident that these three different sizes of nominal arguments correspond to the amount of phonological material: the most structurally articulate Agent in a Periphrastic Passive contains a preposition, in addition to the case suffix, the Genitive Agent in a transitive nominalization contains just a case suffix, and finally *pro_{arb}* is morphologically zero. Thus, particular levels of obliqueness also correspond to various levels of structural deficiency, i.e. morphological case is layered (cf. Caha (2007) and this volume). In a system of Sportiche (1996) incorporating the varying 'richness' of an NP de-

⁸As will be argued below, this is because the higher projections in the verbal f_{seq} are missing, and hence cannot check/agree with the more restricted and deeply embedded features in the nominal f_{seq} .

⁹As for animate, human nouns and pronouns in a *przez*-phrase in (7a), one speculation can be offered. When the paradigms of Polish pronouns are examined, it seems that syncretism grows as one climbs along the Silverstein Hierarchy. Thus, e.g. 1 Person pronoun in Accusative case (i.e. the case that occurs in a PP) *mnie* is syncretic with three other cases: Genitive, Dative and Locative, whereas Accusative of 2 Person pronoun is syncretic with Genitive. Therefore, it is not clear that the *przez*-phrase always involves pronouns in Accusative case. If that kind of explanation was pursued, the selection of a particular case by a preposition might simply be an illusion. Since it requires careful examination of syncretism in Polish and cross-linguistically, I leave this issue for future research.

pending on its place on Silverstein's Hierarchy, one would expect this kind of (morpho)phonological scale effects to go in exactly the opposite direction, i.e. it is the NP that is most referentially restricted that should be most morphologically complex.

2.3. Subject diagnostics

A further question that arises is whether there are any other syntactic manifestations or diagnostics indicating different positions external arguments occupy, apart from their referential restrictions and morphological shapes. This brings us to the question of 'subjecthood'. Work on grammatical functions in the past decade or so has made it clear that the distribution of subject properties is not a straightforward categorical issue (cf. among many others McCloskey (2001) and Williams (2003) in a different set of assumptions). In a framework assuming Cinque's hierarchy, where each adverbial has a strictly defined place in it, I can see only one way of interpreting different degrees of subjecthood. If e.g. a diagnostic X (say, adverbial clause attachment) requires a c-commanding NP to be well-formed, the possibility to act as such a 'controller' grows as the NP moves to subsequent positions in the verbal f_{seq} . In what follows I provide four such tests, where the prediction is that the degree of 'subjecthood' should correlate with the findings from the previous section, i.e. it should be the lowest for the Agent expressed in a *przez*-phrase in PP and one instantiation of the NO, intermediate for the transitive NOM, and the highest for the covert *pro_{arb}*.

Polish has two types of (temporal) participial clauses: one headed by a present participle in *-ąc*, and another headed by a past participle in *-wszy/wszy*.

• Control into present and past participial clauses

- (10) a. Rzuc-a-n-o kamienie, próbuj-ąc wymusić odwrót.
 throw-Th-n-o stones_{ACC} try-pr.prt enforce_{inf} withdrawal_{ACC}
 'People were throwing stones, trying to enforce withdrawal.'
- b. Wy-pi-wszy herbatę, czyt-a-n-o książkę.
 pref-drink-pst.prt tea_{ACC} read-Th-n-o book_{ACC}
 'Having drunk the tea, someone was reading a book.'

- (11) a. *Kamienie były rzuc-a-n-e przez Marka,
stones_{NOM} be_{pst.3non.vir} throw-Th-n-non.vir by Marek
próbuj-ąc wymusić odwrót.
try-pr.prt enforce_{inf} withdrawal_{ACC}
intended: ‘Stones were thrown by Marek, trying to enforce
withdrawal.’
- b. *Wy-pi-wszy herbatę, książka była czyt-a-n-a
pref-drink-pst.prt tea_{ACC} book_{NOM.f} be_{pst.3sg.f} read-Th-n-f
przez Marka.
by Marek
intended: ‘Having drunk the tea, a book was read by Marek.’
- (12) a. ?Marka rzuc-a-n-ie kamieni, próbuj-ąc wymusić
Marek_{GEN} throw-Th-n-ie stones_{GEN} try-pr.prt enforce_{inf}
odwrót
withdrawal
‘Marek’s throwing stones, trying to enforce withdrawal’
- b. ?Marka czyt-a-n-ie książki, wy-pi-wszy herbatę
Marek_{GEN} read-Th-n-ie book_{GEN} pref-drink-pst.prt tea_{ACC}
‘Marek’s reading a book, having drunk the tea’
- (13) a. *rzuc-a-n-ie kamieni przez Marka, próbuj-ąc wymusić
throw-Th-n-ie stones by Marek try-pr.prt enforce
odwrót
withdrawal
- b. *czyt-a-n-ie książki przez Marka, wy-pi-wszy herbatę
read-Th-n-ie book_{GEN} by Marek pref-drink-pst.prt tea_{ACC}

As indicated above, the best candidate for ‘controlling’ the subject of these adverbial clauses is the implied Agent in IP (cf. (10)). The Genitive NP in a transitive NOM is acceptable only for a part of speakers, and with hesitations (cf. (12)). Finally, the worst kind of ‘controller’ is an Agent in a *przez*-phrase (cf. (11) and (13)).

• Binding of Reflexive

- (14) a. *pro-arb_i* Opowiada-n-o bajki swoim_i żonom.
tell-n-o tales_{ACC} refl.poss_{DAT} wives_{DAT}
‘People told tales to their wives.’

- b. (?)?Bajki były opowiada-n-e swoim_i żonom
 tales_{NOM} be_{pst.3non.vir} tell-n-non.vir refl.poss_{DAT} wives_{DAT}
 przez dyrektorów_i.
 by managers
 'Tales were told their wives by the managers.'
- c. Marka opowiadanie bajek swojej żonie
 Marek_{GEN} telling tales refl.poss_{DAT} wife_{DAT}
 'Marek's telling tales to his wife.'
- d. (?)?opowiadanie bajek swojej żonie przez Marka
 telling tales refl.poss wife by Marek
 'telling tales to his wife by Marek'

In spite of certain claims in the literature that binding is not possible out of a *by*-phrase, the facts are much less clear-cut (cf. e.g. the discussion in Collins (2004)). In Polish it seems that binding of a possessive reflexive is possible in both IP and the transitive NO (cf. (14a) and (14c)), and slightly deviant out of a *przez*-phrase (cf. PP in (14b) and NO in (14d))¹⁰. In any case the direction of scale effects is consistent with the findings from the previous section.

Similar grammaticality differences are observed with the so-called depictive secondary predicates in Instrumental case, as shown in (15). Here, however, the judgements are extremely delicate, as not for all the speakers Instrumental depictives are acceptable to begin with. For those for whom they are, the direction of increasing acceptability is consistent with the previously discussed tests.

• Depictive Secondary Predicates

- (15) a. Ten obraz mal-owa-no chyba pijanym.
 this picture_{ACC} paint-Th-no probably drunk_{INSTR}
 'Someone was probably painting this picture drunk.'
- b. ??Ten obraz był chyba mal-owa-n-y
 this picture_{NOM.m} be_{pst.3sg.m} probably paint-Th-n-m
 pijanym.
 drunk_{INSTR}
 intended: 'This picture was probably painted drunk.'
- c. ??mal-owa-n-ie obrazu przez Janka pijanym
 paint-Th-n-ie picture_{GEN} by Janek drunk_{INSTR}
 intended: 'painting the picture by Janek drunk'

¹⁰The judgements are delicate here and therefore indicated by an additional (?).

- d. (?)Janka mal-owa-n-ie obrazu pijanym
 Janek_{GEN} paint-Th-n-ie picture_{GEN} drunk_{INSTR}
 ‘Janek’s painting the picture drunk.’

Finally, the test that yields very clear judgements is the possibility to attach to any verb with the reflexive clitic *się*. These are of four different types: (i) *Reflexiva Tantum* (verbs never occurring without the clitic) (cf. (16a)); (ii) Anticausatives (cf. (16b)); (iii) prefix-induced reflexive verbs (cf. (16c)) and (iv) inherent reflexive verbs (where the activity is directed at oneself, cf. (16d)).

• **Compatibility with the reflexive clitic**

- (16) a. *Marek był poco-n-y się.
 Marek be_{pst.3sg.masc} sweat-n-3sg.masc refl
- b. *Marek został przewróco-n-y się.
 Marek become_{pst.3sg.masc} overturn-n-3sg.masc refl
- c. *Marek został za-kocha-n-y się.
 Marek become_{pst.3sg.masc} pref-love-n-3sg.masc refl
- d. *Marek został uczesa-n-y się.
 Marek become_{pst.3sg.masc} comb-n-3sg.masc refl
- (17) a. Poc-on-o się.
 sweat-n-o refl
 ‘Someone was sweating.’
- b. Przewróc-on-o się.
 overturn-n-o refl
 ‘Someone overturned.’
- c. Za-kocha-n-o się.
 pref-love-n-o refl
 ‘Someone fell in love.’
- d. Uczesa-n-o się.
 comb-n-o refl
 ‘Someone combed.’
- (18) a. (Marka) poce-n-ie się przy pracy
 (Marek_{GEN}) sweat-n-ie refl at work
 ‘(Marek’s) sweating at work’
- b. (Marka) przewróce-n-ie się na lodowisku
 (Marek_{GEN}) overturn-n-ie refl at ice-rink
 ‘(Marek’s) falling on the ice-rink’

- c. (Marka) za-kocha-n-ie się w Ewie
(Marek_{GEN}) pref-love-n-ie refl in Ewa
'(Marek's) falling in love with Ewa'
- d. (Marka) uczesa-n-ie się
(Marek_{GEN}) comb-n-ie refl
'(Marek's) combing'
- (19) a. *poce-n-ie się przez Marka
sweat-n-ie refl by Marek
- b. *przewróce-n-ie się przez Marka
overturn-n-ie refl by Marek
- c. *za-kocha-n-ie się przez Marka
pref-love-n-ie refl by Marek
- d. *uczesa-n-ie się przez Marka
comb-n-ie refl by Marek

Irrespective of the type of the reflexive verb, all are acceptable in IP and the transitive NO (cf. (16) and (18) respectively), but ungrammatical in both constructions where an Agent is expressed in a *przez*-phrase (cf. (17) and (19)). The summary of the results of all four subject diagnostics for the four relevant constructions is presented in Table 2.

Table 2: Subjecthood tests

test	IP	PP	NO + by	NO + GEN
control into pr.prt clause	OK	*	*	?
control into pst.prt clause	OK	*	*	?
binding of poss.refl	OK	(?)?	(?)?	OK
depictive	OK	??	??	(?)
refl. clitic	OK	*	*	OK

2.4. Some further predictions

Pulling the results from the previous two sections together, we have arrived at the following lexical specification of particular Polish case markers/ prepositions in (20):

- (20) a. [F_xP [F_yP [F_zP [NP]]]]
 b. ─────────────────────────── *przez DP*
 c. ─────────────────── *DP-Genitive*
 d. ─────────── *pro_{arb}*

It needs to be pinpointed that whatever the case status of *pro_{arb}* is, it is not Nominative (as might be hypothesized given the phonologically unmarked status of NOM). This is confirmed by (21). Although the secondary predicate always has at least an option of agreeing with the Nominative subject for case, in IP construction it needs to occur in Instrumental case.

- (21) a. Jan nigdy nie odrabiał lekcji **głodny**/
 Jan never neg do_{pst.sg.m} lesson_{GEN.pl} hungry_{NOM.sg.m}/
 głodnym.
 hungry_{INSTR.sg.m}
 ‘Jan never did his homework hungry.’
 b. *pro_{arb}* Nigdy nie odrabia-n-o lekcji **głodnym**/
 never neg do-n-o lesson_{GEN.pl} hungry_{INSTR.sg.m}/
 *głodny/ *głodni/ *głodne
 *hungry_{NOM.sg.m}/ *hungry_{NOM.vir}/ *hungry_{NOM.non.vir}
 ‘People never did their homeworks hungry.’

Trying to incorporate two other cases into the hierarchy, one might consider one further piece of evidence. The systematic syncretism in the masculine declension in Polish (cf. Caha (2008) in the present volume for the syncretism argument fully developed) is also based on Silverstein’s Hierarchy and illustrated in Table 3:

Table 3: Syncretism within masculine declension

	sg	pl
inanimate	ACC = NOM	ACC = NOM
animate	ACC = GEN	ACC = NOM
human	ACC = GEN	ACC = GEN

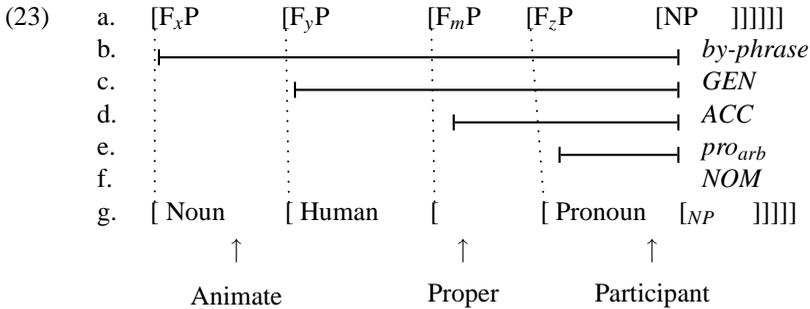
Accusative of these nouns is systematically syncretising with either Nominative or Genitive. For inanimates it is syncretic with Nominative in both Numbers, for animates it is syncretic with Genitive in the singular and Nominative in the plural. Finally, for human nouns it is syncretic with Genitive in both Numbers¹¹. If systematic syncretism can only target adjacent Cases (cf. Caha (2007)), then it seems that the chunk of structure relevant for Polish Accusative marker must be intermediate between the chunk relevant for Polish Nominative and Genitive case suffixes¹². Now, because the Nominative suffix is very often phonologically zero in Polish (and cross-linguistically, as it seems), especially in the masculine declension, I take it to imply the lexical specification in (22), where Nominative arguments are simply bare NPs/DPs without any K-layer:

- (22) a. [F_yP [F_mP [NP]]]
 b. |-----| GEN
 c. |-----| ACC
 d. NOM

Finally, bringing all the relevant evidence about case markers in (20), (21) and (22) together, and alligning it with the features on Silverstein's Hierarchy we arrive at (23).

¹¹Abstracting away from the complication related to Number here, it seems that the more structurally deficient the noun is judging by its referential restrictions, the more 'oblique' it has to be in a given configuration (e.g. in the case at hand in the direct object position). This is exactly the effects observed with Differential Object Marking (cf. e.g. Aissen (2003) and footnote 9).

¹²Ultimately, the syncretism hypothesis is a result of the way case suffixes compete for insertion (*Maximize Feature Spell out* in Jabłońska (2007)): if there was another suffix α that would be lexically specified to spell out the chunk of structure bigger than Accusative suffix, but smaller than Genitive, in every case where this region of f_{seq} were being targeted, Genitive suffix would be blocked by α , as some of the former's featural hierarchy would have to be 'compromised' in insertion.



The projections in (23g) have not been labelled to allow for further fine-grainedness. This particular system yields a set of very concrete predictions.

Firstly, there is at least one additional feature on Silverstein's Hierarchy intervening between [Noun] and [Human], namely [Animate]. Jabłońska (2007) argues that the morpheme spelling out the chunk of structure smaller than [F_xP []] but bigger than [F_yP []] is called Dative in Polish. Now, the prediction is that all external arguments in Dative case should be restricted to denote [Animate] entities. This prediction is in fact confirmed, as shown in (24). In the so-called *Dative Reflexive Construction*, where the usual Agent in the Nominative case is expressed in Dative and the reflexive clitic is present, only animate external arguments are allowed. This is in spite of the fact that the predicate (e.g. *leżeć* ('lie') in (24)) is not so restricted otherwise.

- (24) *Przyjemnie mu/ mi się Markowi/ koniom/ *książce*
*nice him_{DAT}/ me_{DAT} refl Marek_{DAT}/ horses_{DAT}/ *book_{DAT}*
leży na trawie.
lie_{pr.3sg} on grass_{LOC}
 'It's nice for him/ me/ Marek/ horses to lie on the grass.'

The same kind of restriction is observed with a group of psych-verbs, usually referred to as *piacere* verbs, although here one could most probably propose some kind of semantic incompatibility between the meaning of the predicate and the referential properties of the argument. Still, that type of explanation seems to beg the question why this particular group of verbs should display 'quirky' case on the subject.

- (25) To mi/ mu się Markowi/ koniom/ *książce
 this_{NOM} me_{DAT}/ him_{DAT} refl Marek_{DAT}/ horses_{DAT}/ *book_{DAT}
 podoba.
 please_{pr.3sg}
 'I/ He/ Marek/ Horses/ *The book like(s) it.'

Secondly, since Accusative in (23) spells out the bit of structure intermediate between the [Human] NP_{GEN} and [Pronoun] *pro*_{arb}, the prediction is that Accusative external arguments would be displaying some intermediate semantic restriction. Obviously, ACC occurs most often on internal arguments. Still, there is a small group of verbs, where it is at least not immediately obvious that the relevant argument is internal. These are verbs of 'physical sensation'.

- (26) Brzuch mnie/ go/ Marka/ ??lekarza boli.
 stomach me_{ACC}/ him_{ACC}/ Marek_{ACC}/ ??doctor ache_{pr.3sg}
 'I/ He/ Marek/ ??The doctor has a pain in the stomach.'

Although the judgements are again delicate, as is in fact expected when dealing with such fine-grained distinctions in speakers' lexical entries, it seems that the denotation of Accusative arguments must be restricted to Proper nouns, in accordance with the prediction in (23). At this point I consider it necessary to compare the kind of predictions that arise in the present system with a selection-based system.

2.5. Selection vs Peeling

The argument structure alternations that are the topic of the present paper are quite frequently analysed in the current literature in terms of selection of 'defective' heads. For instance, it is often claimed that a projecting nominalizing head *nP* in the sense of Marantz (1997) selects for a defective/deficient light verb projection, i.e. the one that lacks certain properties associated with its more frequent equivalent (in this case probably external argument introduction, case assignment, etc.). Similarly, e.g. Tense/Aspect based ergativity splits are claimed to involve a particular value of Tense/Aspect selecting for a 'defective' light verb (cf. e.g. many contributions to Johns et al. (2006)). Very often, this kind of selection must out of necessity be long-distance, as more and more syntactic heads are being proposed. This kind of system, however, is very powerful, and therefore yields all sorts of unattested argument structure scenarios.

Consider first a selection-based system. Suppose we take the following derivation:

$$(27) \quad [{}_{F_3P} \{Y\} [{}_{F_1P} \{X\}]]]$$

and we know independently that F_3P always c-commands F_1P - a very basic version of some functional hierarchy, which is anyway commonly assumed, if only implicitly. Both of these projections are associated with a certain set of features $\{X\}$ and $\{Y\}$ respectively. The content of these features vary depending on the phenomenon being analysed, e.g. *phi*-features for agreement facts, Case features and argument introduction for argument structure alternations. Since *phi*-features introduce an additional complication (and hence a still higher number of possibilities) to the effect that they are not unique to functional projections (e.g. both v^0 and T^0 can have [Person] or [Number] feature), I will restrict the considerations here to FP-unique features. Let's assume then that F_3P in (27) selects a 'defective' F_1P with a set of features $\{X'\}$, where $\{X\} \subset \{X'\}$. Now, if a third functional projection is considered, F_2P , and we know independently that it occupies a place intermediate between F_3P and F_1P , there is still nothing interesting to be said about its set of features $\{Z\}$. In other words, $\{Z\}$ could be taking as its complement both F_1P with the feature $\{X\}$ or $\{X'\}$. The interesting scenario is if the derivation terminates with F_2P , e.g. if F_2P is a nominalizing head n^0 . As the features are projection-specific, the final set of features of this derivation will be equal to either (i) $\{X\} \cup \{Z\}$ or (ii) $\{X'\} \cup \{Z\}$. Interestingly, the former scenario would entail that the structure $[F_3P \dots]$ lacks certain features w.r.t. the structure $[F_2P \dots]$ (namely, the features present in $\{X\}$ but absent on $\{X'\}$).

Giving more substance to this abstraction, if F_3P is finite TP, and F_2P is nP , one would predict that there would be nominalizations which are featurally richer from their corresponding finite clauses.¹³ This phenomenon, as far as I can see, is unattested in natural language. To wit, there are no nominalizations e.g. displaying one argument more than their corresponding finite clauses. In such a system, then, essentially anything can happen. In split ergative languages, for instance, any kind of aspectual head can select a 'defective' v , thus also imperfective aspect can define an ergativity domain.

¹³Of course, non trivial considerations enter the picture here, e.g. whether 'lexical' case assignment (e.g. Instrumental in nominalizations) should be treated as instantiating a formal feature on FP. In most of the accounts, however, the latter is treated as some kind of a 'default' or a 'last resort' mechanism, i.e. a side-effect of lacking a structural case feature. This allows to keep a definitional property of a defective head contentive.

It is widely known, however, that there are all sorts of implicational relations of the type: 'If a language X is NOM/ACC in Perfective Aspect, it is also NOM/ACC in Imperfective Aspect'. All these implications are lost in a selection-based system.

In the present system, however, where features are being gradually added with every functional projection, clear predictions concerning featural make-up arise.

- (28) a. $\{Z\} \cup \{X\} \subset \{X\}$
 b. $\{Y\} \cup \{Z\} \cup \{X\} \subset \{Z\} \cup \{X\}$
 c. $\{Y\} \cup \{Z\} \cup \{X\} \subset \{X\}$

Thus, no nominalizations are allowed, which would have 'richer' argument structure than their finite equivalents. Similarly, if ergativity boils down to some light verb projection 'not assigning' Accusative case (and with the present Peeling hypothesis this simply means not reaching a certain level of structure in the verbal f_{seq}), then it is clear that Perfective Aspect must (universally) correspond to F_2P , and Imperfective Aspect - to F_3P . If it was the other way round, the structure [F_3P [...]] would have to correspond to a subset of features associated with [F_2P [...]] - a case excluded in the present system.

The more we know about the cartography of the clausal domain, the more these phenomena have scale-like effects. Additionally, the Peeling (or Layered Case) hypothesis serves as a diagnostic of the level of structure we are dealing with. For the aforementioned reasons I consider the present framework to be best equipped to yield the kind of scalarity effects discussed in this paper. After these theoretical considerations I turn to particular derivations.

2.6. Dynamic phase boundary

I follow Ramchand (2003) in assuming a tripartite decomposition of the thematic domain into (at least) vP introducing a causing subevent, VP introducing a change-of-state subevent, and RP introducing a Result State. Furthermore, vP will be further decomposed into a variety of light verb heads. I have also argued in Jabłońska (2007) that the morpheme that spells out the relevant functional domain in Polish is the Theme - the suffix occurring between the

root and the Tense morpheme with the lexical entry in (29), where v is an abstraction over the whole light verb system.¹⁴

(29) Th: [v^0, V^0, R^0]

Now, because v^0 decomposes into a whole hierarchy of light verbs, and because a phonological exponent is being inserted in accordance with *The Superset Principle* in (1), the Theme can be inserted for any subsequence of (29). The central hypothesis about the *-n/t-* morpheme, on the other hand, is that it has a lexical specification overlapping with the Theme. Specifically:

(30) **-n/t-** in Polish spells out the same region of the clause as the Thematic vowel: [$v^0 [V^0]$], but with the default values of the relevant projections. Default values of projections lack both semantic content, as well as uninterpretable features.

Consequently, the constant negotiation of spell-out options between the Thematic vowel and **-n/t-** results in a typology of ‘passives’ and nominalizations, as will be shown directly.

Furthermore, one interesting property of *-n/t-* in (31) has to be pointed out.

(31) A default value of a projection in the light verb system enables lexicalization of its complement.¹⁵

What (31) amounts to is defining a phase boundary - the point at which Vocabulary Insertion must take place. Since Vocabulary Items are flexible in the way they insert, this phase boundary is in effect dynamic.

Consider a derivation relevant for the Periphrastic Passive in (32).

(32) Lexical Insertion for PP:
 $[_{v_n P} v_n^0 [_{v_3 P} v_3^0 [_{v_2 P} v_2^0 [_{v_1 P} t_{F_1 P} v_1^0 [_{VP} t_{DP_{obj}} V^0]]]]]]$
 ─────────── n/t ───────────| ─────────── Th ───────────|

¹⁴This lexical entry is really an abstraction over two different types of Themes with different lexical specification. The issue is irrelevant for the present purposes.

¹⁵The question arises whether this is a universal or language-specific property. In other words, if the account is to be extended to other languages, the difference between periphrastic passives (as in Germanic or Slavic) and synthetic passives (as e.g. in Turkish) has to be accounted for. Either (31) is language-specific or the periphrasis in languages like Turkish is harder to detect. I leave the issue open here.

The first projection in the light verb system introduces a causing subevent and its uninterpretable Θ -feature is checked/Matched by an external argument in the oblique shape F_1P (i.e. a *przez*-phrase).¹⁶ Then, a default value of v_2P is merged, inducing a phase boundary, so the Lexicon needs to be consulted. The only phonological exponent that spells out default values of the light verb system is *-n/t-*. Note that this lexical inventory restriction guarantees that no 'interweaving' of projections within the light verb system is admissible. In other words, even if v_3 with uninterpretable features would be merged in (32), the derivation would crash as there would be no phonological exponent to spell out the region $[v_n, \dots v_3]$. Before lexical insertion takes place both arguments need to evacuate v_1 . The notorious question that arises now is why the movement of the object to the Nominative position does not induce Relativized Minimality/ Minimal Link Condition violation. A variety of solutions to this problem has been proposed, and for space reasons I will not address it here, remarking only that one natural way to account for that problem under the present assumptions is to say that the feature relevant for movement to the Nominative position is too deeply embedded in F_1P , and hence the *by*-phrase is not a matching Goal. By the same reasoning, the object in (32) must display a higher degree of structural deficiency. Finally, a lexical Auxiliary verb that restarts a new f_{seq} is merged and the latter provides the Nominative position for the object to move to.

Consider now the derivation relevant for the nominalization with a *przez*-phrase in (33).

- (33) Lexical Insertion for NO + *by*:
 $[_{DP} D^0 [_{v_nP} v_n^0 [_{v_2P} v_2^0 [_{v_1P} t_{F_1P} v_1^0 [_{VP} t_{DP_{obj}} V^0]]]]]$
 -ie |----- n/t -----| |----- Th -----|

The derivation proceeds essentially as in PP, except for the last step, where a high functional projection in the nominal f_{seq} is merged. Note that the object remains at an intermediate level of structural deficiency, i.e. Genitive case (cf. (7c)). Assuming that no further peeling takes place within the nominalization, it seems to imply that also in the PP in (32) the object is Genitive before it gets peeled to Nominative. The latter fact in turn corroborates the higher degree of structural deficiency of the object w.r.t. the subject in the PP alluded to before.

¹⁶The Θ -feature needs to be either optional to avoid a crashing derivation in passives with only implied Agents, or else high level of obliqueness allows for post-syntactic deletion, as e.g. in polysynthetic languages, where pronominal agreement can only optionally be doubled by overt arguments.

In a transitive nominalization both v_1 , as well as v_2 with uninterpretable Θ -features are merged.¹⁷

(34) Lexical Insertion for transitive NO:

$$[_{DP} D^0 [_{v_3P} v_3^0 [_{v_2P} t_{F_2P} v_2^0 [_{v_1P} [F_1P t_{F_2P}] v_1^0 [_{VP} t_{DP_{obj}} V^0]]]]]$$

-ie -n/t- |-----| Th |-----|

This results in an obligatory subextraction of F_2P to $Spec, v_2P$. As this particular projection in the nominal f_{seq} corresponds to the feature [human], the referential restriction on the Subject will be conspicuous. As this time the Subject is much more peeled than in the previous derivations, the object will never be able to cross the subject, yielding strict order preservation effects in (8b). Finally, for the very same reason, i.e. a higher position occupied by the subject, the latter will be able to pass all the subjecthood diagnostics relevant for the region in between v_2 and v_1 , i.e. the ones that the argument in a *przez*-phrase have failed (as e.g. ‘binding’ of the reflexive clitic).

Last but not least, consider the derivation for Impersonal Passive in (35).

(35) Lexical Insertion for IP:

$$[_{v_4P} v_4^0 [_{v_3P} t_{F_3P} v_3^0 [_{v_2P} [F_2P t_{F_3P}] v_2^0 [_{v_1P} [F_1P t_{F_2P}] v_1^0 [_{VP} t_{DP_{obj}} V^0]]]]]$$

-n/t- |-----| Th |-----|

In this spell-out scenario the Theme ‘up-squeezes’ the *-n/t-* morpheme most, as v_3 is also merged as non-default. The subject reaches a high position in $Spec, v_3P$, and a high degree of structural deficiency (i.e. F_3P). This, in turn, yields the ability to pass almost all Subject diagnostics, as well as referential restriction [human pronoun]. I submit, however, that when the Lexicon is consulted, it turns out that Polish lacks a phonological exponent for this deficient feature hierarchy. Consequently, a covert *pro_{arb}* emerges (cf. also Holmberg (2004) for a similar post-syntactic account of *pro* drop).¹⁸ On this kind of account the impossibility to ‘add’ any *by*-phrase in the IP follows straightforwardly, as *by*-phrases are not conceived of as ‘doubling’ the external argu-

¹⁷I operate here only with projections that are relevant for the data analysed, i.e. the subscripts should be treated as arbitrary, allowing for more fine-grained distinctions.

¹⁸This hypothesis that ties the emergence of *pro_{arb}* to a particular structural position is substantiated by the fact that certain languages have different overt items to spell out subject *pro_{arb}* and object *pro_{arb}*, as e.g. Swedish *man* and *en* respectively.

ment in any sense. Since IP already has a full-fledged external argument, no other Agent can possibly be added.

3. Conclusion and loose ends

The above analysis of the Polish *-n/-* morpheme situates itself within the theories conceiving of scales as being epiphenomenal in nature, and deriving from the way the computational machinery operates. I have argued that the very fine-grained decomposition of a universal hierarchy, combined with a special algorithm relating arguments to this verbal hierarchy, i.e. Peeling, and a flexible way of inserting the relevant morpheme yields scalar effects on several levels: (i) growing degree of subjecthood; (ii) growing referential restrictions referred to as The Silverstein Hierarchy; (iii) diminishing morphological complexity (i.e. from PPs to case-marked DPs to covert *pro*). This system has an advantage over the one based on long-distance selection of 'defective' heads resulting in 'defective Agree', as the latter is much more unrestricted and hence overgenerates: apart from the scalar effects it has the potential to derive also all sorts of unattested derivations.

One proviso that needs to be made is that the correlation between The Silverstein Hierarchy and morphological complexity must be restricted to external arguments. Most obviously, it is not the case that only animate nouns display Dative case, or only human nouns - Genitive. In fact, it seems that exactly the opposite correlation between the two scalarity effects is observed for objects: the higher the referential restrictions, the more morphologically complex an argument is (e.g. only local person pronouns retain Accusative case on the object in Finnish passives, cf. Manninen and Nelson (2004)). I have to leave this issue for future research.

Similarly, it is an open question what happens to the peels that the external argument leaves in the subsequent specifiers. In a certain sense this seems to be a scenario reminiscent of the emergence of *pro_{arb}*, i.e. the lack of phonological exponent to spell out the shell. On the other hand, it might also suggest a restriction on spell out to the effect that spell out can only target contiguous heads.

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