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Prepositional inanimates in Dutch: A paradigmatic case of Differential Object Marking

Abstract: In this paper I examine an animacy-related encoding alternation in Dutch generally observed with verbs denoting physical contact. This largely unnoticed pattern in Dutch is reminiscent of the phenomenon of *Differential Object Marking* (DOM) as attested in a large number of languages. I will argue that the Dutch pattern should indeed be interpreted as DOM albeit of a specific type. I claim Dutch DOM to be an instance of paradigmatic DOM used to signal a thematic difference between two groups of objects, that of animate and inanimate ones. Crucially, animate, but not inanimate, undergoers exhibit the property of sentience, a predicate entailment shown to be associated with the undergoer argument of physical contact verbs in Dutch.

Keywords: animacy, contact verbs, Dutch, Differential Object Marking, proto-roles

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1 Introduction

The morphosyntactic encoding of participants involved in the eventuality expressed by a predicate can be influenced by many different factors including ones related to the participants themselves or to the predicate. Animacy is one such cross-linguistically recurrent feature involved in differential argument marking (e.g., Comrie 1989; Yamamoto 1999; de Swart et al. 2008). In this paper I examine an animacy-driven encoding alternation observed with a certain class of verbs in Dutch. The relevant pattern is illustrated below:

- (1) a. *De hond beet de man.*
the dog bit the man
'The dog bit the man.'

- b. *De hond beet in het brood.*
 the dog bit in the bread
 ‘The dog bit the bread.’

The animate undergoer of the biting action, *de man* in (1a), is encoded as a regular direct object. The inanimate *het brood* in (1b), by contrast, is encoded as a prepositional phrase. This encoding alternation is generally observed with verbs denoting physical contact (e.g., *bijten* ‘to bite’, *slaan* ‘to hit’, *schoppen* ‘to kick’). This largely unnoticed pattern in Dutch is reminiscent of the phenomenon of *Differential Object Marking* (DOM) as attested in a large number of languages (Bossong 1985, 1991; Aissen 2003). I will argue that the Dutch pattern should indeed be interpreted as DOM albeit of a specific type. DOM, in particular when associated with animacy, is generally considered a syntagmatic phenomenon in that it involves the relation between the subject and the object (Aissen 2003; de Swart 2006, 2007, 2011; Malchukov 2008). Following Ackerman and Moore’s (2001) approach to argument encoding alternations based on Dowty’s (1991) Proto-Roles proposal for thematic roles, I claim Dutch DOM to be of a paradigmatic nature. This means that the encoding alternation under discussion is not driven by a need to distinguish the subject from the object, as in syntagmatic DOM, but that it is used to signal a thematic difference between two groups of objects, that of animate and inanimate ones. Crucially, animate, but not inanimate, undergoers exhibit the property of sentience, an argument entailment shown to be associated with physical contact verbs in Dutch. As a result, inanimates show a lower number of Proto-Properties and hence, in line with the Paradigmatic Argument Selection Principle of Ackerman and Moore (2001), receive a more oblique (prepositional) encoding.

The discussion in this paper enhances the understanding of DOM systems related to animacy in two respects. On the empirical level it shows that animacy-driven DOM is not necessarily syntagmatic in nature, but can also receive a paradigmatic explanation. On the theoretical side it complements the existing Proto-approach to syntagmatic animacy DOM formulated in Primus (2012). The result is a uniform account of (seemingly) animacy-driven DOM patterns in terms of Dowtyian Proto-Properties.

This paper is organized as follows: the next section provides a more detailed introduction to the phenomenon of Differential Object Marking. It discusses recurrent patterns found in the languages of the world and the explanations proposed for them. Section 3 focuses on the syntactic status of the prepositional inanimate undergoer exemplified in (1b) above. On the basis of several linguistic tests I will argue it to be most similar to prepositional complements. In Section 4 I introduce

in more detail the class of verbs exhibiting the alternation in (1) above and I discuss their semantic properties. Section 5 discusses the relevant Proto-Property of sentience and presents the analysis in terms of the Paradigmatic Selection Principle. This is followed by a general discussion of animacy-driven DOM patterns in terms of Proto-Properties in Section 6. Section 7 presents the conclusions.

2 Differential object marking

The label *Differential Object Marking* (DOM) is generally used for languages in which a subset of direct objects is overtly marked whereas other objects are either unmarked or marked in a different way depending on their referential features (Bossong 1985, 1991; Aissen 2003; Malchukov and de Swart 2008). This definition is liberal in several ways making the phenomenon of DOM rather heterogeneous. On the one hand, discussions of DOM include different types of coding mechanisms such as case, agreement, and variations in word order. At the same time, it is not always directly clear whether a given pattern should be seen as an instantiation of DOM. For instance, does the fact that English distinguishes morphological case only for pronouns make it a DOM language? Nevertheless, clear-cut cases of DOM abound in the languages of the world. In many (Indo-European) languages DOM takes the shape of a differential adpositional marker which functions as a regular case marker (e.g., in Spanish, Hindi, Persian, Armenian). Correspondingly, the phenomenon is sometimes dubbed *prepositional accusative* (especially in the literature on Romance languages).

DOM interacts with the referential properties of the object, of which animacy, definiteness, and specificity are most commonly involved, or with properties of the predicate such as tense or aspect. Some languages determine object marking on the basis of several of these features resulting in so-called multidimensional DOM systems (Aissen 2003; Klein and de Swart 2011). The argument features animacy, definiteness, and specificity are often conceptualized in terms of implicational hierarchies (Bossong 1985; Aissen 2003). In the case of animacy, for instance, we find the hierarchy human > animate > inanimate with the corresponding prediction that if objects at a certain rank in this hierarchy are overtly marked then the ones ranking higher will be as well. Anti-hierarchical patterns such as overt marking of inanimates but not animates should be unattested. Take, for instance, the multidimensional DOM language Spanish in which the occurrence of the DOM marker *a* interacts with the animacy, definiteness, and specificity of the direct object (von Heusinger and Kaiser 2003; von Heusinger 2008; Leonetti 2004). Concentrating on the first feature we find that this language

overtly marks humans and animates (2a) but not inanimates (2b). The resulting pattern is in accordance with the implicational animacy hierarchy.¹

- (2) a. *Mari vió *(a-l) gato.*
 Mari saw DOM-the cat
 ‘Mari saw the cat.’
- b. *Mari vió (*a) la mesa.*
 Mari saw DOM the table
 ‘Mari saw the table.’

Spanish DOM presents an alternation between overt marking and absence of marking on the direct object. Such asymmetric systems (de Hoop and Malchukov 2007; Malchukov 2008) constitute the core of the phenomenon of DOM and often receive a syntagmatic explanation. That is, the use of overt marking is motivated by the need to distinguish the object from the subject (Aissen 2003; de Swart 2007, 2011; de Hoop and Malchukov 2007; Malchukov 2008). Spanish, for instance, does not distinguish subject and direct object NPs by other grammatical means (both appear in a null or absolutive form), and hence constructions as in (2) are potentially at risk of becoming ambiguous. The use of the marker *a* resolves such ambiguity. The need to disambiguate is pressing especially when animacy is involved, as this feature can provide crucial information about the role an argument plays in the eventuality described by the predicate (see Section 6 below for further discussion). It is therefore not surprising that DOM is most often found with human and animate objects as these are most likely to be confused with subjects, which tend to have the same features.

Such syntagmatic considerations are absent in so-called symmetric DOM systems in which we find an alternation between two (or more) overt encodings of direct objects. That is, one group of objects is marked with marker *x* whereas another group of objects is marked with marker *y*. As a result, all objects are formally distinguished from the subject making a syntagmatic explanation in terms of the need to disambiguate a certain class of objects from the subject unavailable for this pattern. Instead, such patterns should receive a paradigmatic explanation. DOM in those cases is often used to highlight a semantic difference between objects (or the sentences they occur in). That is, marking the same direct object with one or the other case marking results in an interpretative difference. The difference between syntagmatic DOM and paradigmatic DOM lies then in the fact

¹ The following abbreviations are used in the examples: ACC accusative, COM comitative, DAT dative, DOM differential object marker, GEN genitive, NOM nominative, PART partitive, PST past tense.

that the former concerns the comparison of relative features (e.g., animacy) of co-arguments of a predicate and the latter compares properties of the same argument (cf. Ackerman and Moore [2001:61–62] who introduce the more general distinction between syntagmatic and paradigmatic selection).

Consider Estonian, a language in which we find an object case alternation (DOM) between partitive and accusative/genitive, corresponding to a telicity distinction (Ackerman and Moore 2001; Tamm 2004; see Kiparsky 1998 for similar facts in Finnish).

- (3) a. *Ma ehitasin endale suvilat (kaks nädalat).*
 I.NOM built myself cottage.PART (two.NOM week.PART)
 'I was building the cottage for myself (for two weeks).' [atelic]
- b. *Ma ehitasin endale suvila (kähe nädalaga).*
 I.NOM built myself cottage.GEN (two.GEN week.COM)
 'I built the cottage for myself (in two weeks).' [telic]
 (Ackerman and Moore 2001:84)

In (3a) partitive case on the object corresponds with an atelic interpretation of the sentence. Genitive case as in (3b), by contrast, corresponds with a telic interpretation. Following Ackerman and Moore (2001) the object in (3b) functions as a bounding entity to the reading event but not the object in (3a). This difference between the two objects drives the case alternation which in turn should be considered paradigmatic in nature.

Both syntagmatic and paradigmatic DOM systems can be related to multifactorial approaches to transitivity as advocated by Hopper and Thompson (1980) and Tsunoda (1981). According to these views transitivity is a gradient parameterized notion in which a higher/lower degree of semantic transitivity relates to a higher/lower degree of formal transitivity (see Comrie [1989] for a related view, and Næss [2004] for a discussion of how these views relate to each other in the domain of DOM). For instance, the paradigmatic DOM system of Estonian would follow from such an approach, as telic sentences are considered to exhibit a higher degree of semantic transitivity than atelic ones and, for accusative languages, the nominative-accusative case frame is taken as expressing the highest degree of formal transitivity. Thus, in Estonian, high semantic transitivity (telicity) correlates with high formal transitivity (accusative case) and lower semantic transitivity (atelicity) with lower formal transitivity (partitive case). Likewise, for Spanish, where sentences with a higher degree of semantic transitivity, those with animate objects, exhibit a higher degree of formal transitivity (*a*-marking). In the latter case, a crucial assumption is that the DOM-marker in Spanish func-

tions like accusative case, cf. the label *prepositional accusative* above, which indeed seems to be the case.

What about the Dutch encoding alternation introduced in (1) above? Should this be considered an instance of Differential Object Marking? The answer to this question depends of course on one's definition of DOM. If one adopts a syntactic definition in which DOM is taken to affect only structural case and not oblique case or PPs, i.e., only pertains to syntactic direct objects, the answer will be in the negative and an alternative characterization of the alternation in (1) has to be found.² I adopt a more semantic definition of DOM in which the alternation is concerned with marking differences of the second argument (P/O, the internal argument) of transitive verbs. Under this definition, the alternation in (1) represents an instance of DOM. It functions like other DOM systems in making a distinction within the category of animacy between two classes of objects (animates vs. inanimates). It thus counts as a split alternation in the terminology of de Hoop and Malchukov (2007). Also, the restriction of the alternation to a specific class of verbs (to be discussed below) is not without precedence in DOM languages (e.g., Mohanan 1990; de Hoop and Narasimhan 2005 for Hindi; von Heusinger 2008 for Spanish), nor in other instances of differential case marking (e.g., Lazard 1985; de Hoop and Narasimhan 2008 for differential subject marking). But, then, what kind of DOM does the Dutch pattern represent? A comparison with the syntagmatic system of Spanish strongly suggests that it cannot be of this type. Where Spanish overtly marks animates, Dutch shows the opposite pattern, marking inanimates. Given that the need for disambiguation, also in the Dutch case, would be higher for animates, the Dutch pattern is hard to explain in a syntagmatic fashion. Moreover, it would present a clear counterexample to the implicational animacy hierarchy. Instead, I argue that the Dutch pattern should be analyzed as a paradigmatic instance of DOM. In order to support this view, we first have to arrive at a better understanding of the syntactic status of the inanimate undergoer and of the semantic properties of the verbs involved. The first point is taken up in the next section, the second one in Section 4. Together they will pave the way for the analysis in Section 5.

² One such alternative characterization may be given in terms of the dative alternation. As suggested by an anonymous reviewer we find a similar restriction on inanimates occurring as direct arguments in English ditransitives (**a student sent the university the letter*). Alignment of the present alternation with the English facts would require the additional assumption that the verbs involved in the alternation can be construed as ditransitive verbs. It is not clear at present how this should work, but see Vanden Wyngaerd (2001:83) for an initial suggestion in this direction.

3 The syntactic status of inanimate PPs

The Dutch alternation under discussion involves the following two syntactic patterns:³

- (4) a. *De hond heeft de man gebeten.* [DO]
 the dog has the man bitten
 ‘The dog bit the man.’
 b. *Hij heeft in de appel gebeten.* [PI]
 he has in the apple bitten
 ‘He bit in the apple.’

The example in (4a) involves an animate undergoer which is encoded as a direct object (DO). Its direct objecthood is illustrated by its ability to undergo passivization (5a) and to occur as the prepositional complement of a substantivized infinitive (5b).

- (5) a. *De man werd gebeten door de hond.*
 the man was bitten by the dog
 ‘The man was bitten by the dog.’
 b. *het bijten van de man (door de hond)*
 the biting of the man (by the dog)

3 There are two other syntactic patterns:

- (i) *Hij heeft in haar hand gebeten.*
 he has in her hand bitten
 ‘He bit her hand.’
 (ii) *Hij heeft **haar** in haar hand gebeten.*
 he has her in her hand bitten
 ‘He bit her in the hand.’

Like regular inanimates, body part expressions occur in a prepositional phrase, cf. (i). Although body parts seem to behave like other inanimates in many respects, they are excluded here because they also occur in another construction (ii) which can be labeled *pseudo-body part possessor raising*. The prefix *pseudo* is used here because the Dutch construction differs from the possessor raising construction in other languages, see e.g., the English translation of (ii), in that it expresses the possessor not only as a separate object but also on the body part and as such is not amenable to a traditional possessor raising analysis. The analysis of these constructions would complicate the picture in an unnecessary way by bringing in orthogonal discussions and hence is deferred to some other occasion.

Shifting our attention to inanimate undergoers, the question to answer is what is the syntactic status of the inanimate PP (labeled here PI for prepositional inanimate). Two alternatives present themselves immediately. We could either analyze it as an adverbial expressing a location or as a prepositional complement on a par with objects of verbs like *wait for* and *look after*.⁴ In the remainder of this section I present arguments in favor of the second option. This outcome aligns with the observation that the verbs under consideration express a relation between two participants. That is, like regular transitive verbs, the events they express involve an agent and an entity receiving the hit, bite or kick (an undergoer). It is not possible to perform a hitting, biting or kicking event without an available undergoer. Thus, both in (4a) and (4b) we are dealing with a transitive event.

Like the category of direct object (see Börjars and Vincent [2008] for a recent overview), the class of prepositional complements is notoriously difficult to define. For Dutch, Broekhuis (2004) argues that we cannot provide a clear-cut definition of PP-objects, but only necessary and sufficient conditions for class membership. A necessary condition is a prerequisite for an element to be a member of the class of prepositional complements but there may also be elements, which are not prepositional complements, with this characteristic. On the other hand, if an element possesses a sufficient condition, it is automatically a member of the class of prepositional complements and at the same time there may be prepositional complements that lack this characteristic. The following discussion is mainly based on the tests to distinguish PP-objects from PP-adverbials, summarized in Broekhuis (2004).

Substitution tests with adverbs classify prepositional inanimates as PP-objects. PP-objects cannot be substituted by a locational adverb like *hier* 'here' or *daar* 'there', cf. (6). This is probably due to loss of the preposition in such paraphrases. Locational adverbials, by contrast, do allow for such substitution in most cases, as shown in (7). Substitution is a necessary condition for PP-objecthood and prepositional inanimates behave like PP-objects, cf. (8). The adverb *daar* in (8b) can only be used to deictically indicate (with an accompanying pointing gesture) a location on the apple, but not the apple itself.

- (6) a. *Jan wacht op zijn vader.* [PP-object]
 John waits on his father
 'John is waiting for his father.'
- b. **Jan wacht hier/daar.*
 John waits here/there

⁴ Auxiliary selection in the perfect tense shows that these PPs cannot be predicative PPs. If so, they would have selected the auxiliary *zijn* 'to be', but they select *hebben* 'to have'.

- (7) a. *Jan wacht op het perron.* [Locational]
 John waits on the platform
 'John is waiting on the platform.'
- b. *Jan wacht hier/daar.*
 John waits here/there
 'John is waiting (t)here.'
- (8) a. *Jan bijt in de appel.* [PI]
 John bites in the apple
 'John is biting in the apple.'
- b. **Hij heeft hier/daar gebeten.*
 He has here/there bitten

Likewise, PP-objects are replaced in questions by a pronominal question adverbial such as *waarop* 'where.on' in (9), whereas locational adverbs are preferably replaced with a question adverb such as *waar* 'where' as in (10a). (11) shows that prepositional inanimates again pattern like regular PP-objects. Note that as in (8b), use of the question adverb *waar* in (11a) is possible but only when referring to a location on the apple, not to the apple as a whole.

- (9) a. *Waarop/*waar heeft Jan zo lang gewacht?*
 where.on/where has John so long waited
 'What has John been waiting for for so long?'
- b. *Jan heeft op een pakketje gewacht.* [PP-object]
 John has on a parcel waited
 'John has been waiting for a parcel.'
- (10) a. *Waar/?waarop heeft Jan zo lang gewacht?*
 where/where.on has John so long waited
 'Where has John been waiting so long?'
- b. *Jan heeft hier zo lang gewacht.* [Locational]
 John has here so long waited
 'John has been waiting here for so long.'
- (11) a. *Waarin/*waar heeft Jan gebeten?*
 where.in/where has John bitten
 'What did John bite in?'
- b. *Hij heeft hierin gebeten.* [PI]
 he has here.in bitten
 'He bit in this here.'

A second test which distinguishes PP-objects from PP-adverbials is their position with respect to the main verb in V-final clauses. PP-objects are located closer to the main verb than adverbial PPs in such environments (under neutral intonation). This seems a robust fact and hence both a necessary and a sufficient condition to separate PP-objects from PP-adverbials.⁵ The prepositional inanimate *tegen zijn fiets* ‘against his bike’ in (13) shows the same behavior as the PP-object *op zijn vader* ‘for his father’ in (12).⁶

(12) ... *dat Jan <op het perron> op zijn vader *<op het perron> wachtte.*
 ... *dat Jan on the platform on his father on the platform waited*
 ‘... that John waited for his father on the platform.’

(13) ... *dat Jan <in de kelder> tegen zijn fiets *<in de kelder>*
 ... *that Jan in the basement against his bike in the basement*
trapte.
 kicked
 ‘... that John kicked his bike in the basement.’

Finally, the nature of the preposition is a much discussed feature of prepositional complements. The observation is that the preposition used for the PP-object of a specific verb should exhibit a limited paradigm (a necessary condition). Table 1 shows that this is also the case for the verbs under discussion. Many take only one preposition, and (in case of variation) no more than three. Besides its paradigm the semantics of the preposition is important as well, as it is often argued that the semantics of P should be bleached, i.e., non-locational. The fact that different languages use different prepositions for translationally equivalent verbs (e.g., Du. *wachten op*/En. *wait for*, Du. *zorgen voor*/En. *look after*) is considered

Table 1: Some DOM verbs and their prepositions

Verb	Prepositions	
<i>slaan</i>	<i>op</i> ‘on’, <i>tegen</i> ‘against’ (, <i>in</i>)	‘to hit, to beat’
<i>bijten</i>	<i>in</i> ‘in’, <i>op</i> ‘op’	‘to bite’
<i>knijpen</i>	<i>in</i> ‘in’	‘to pinch’
<i>krabben</i>	<i>aan</i> ‘on, to’	‘to scratch’

⁵ Reversal is possible when the adverbial is not a PP (Broekhuis 2004:113).

⁶ The order in which the adverbial PP follows the PP-object is grammatical when we construct it as one complex phrase with the adverbial modifying the NP in the PP-object (a low-attachment reading), e.g., [*tegen [zijn fiets [in de kelder]]*].

an argument in support of this claim. Nevertheless, the argument seems based on a limited set of much discussed verbs and is not uncontested. For instance, Davis (2001) shows that in English many verbs with a prepositional complement do have contentful Ps, making semantic bleaching of the preposition a sufficient condition. Fact is that the Dutch verbs under consideration select prepositions with a clear locational meaning and that prepositional choice in case of variation seems dependent on the nature of the complement, e.g., *bijten* ‘to bite’ selects *in* ‘in’ if the surface of the object is easily pierced (*in een appel bijten* ‘to bite in an apple’) and *op* ‘on’ if not (*op een bot bijten* ‘bite on a bone’). Thus, the nature of the preposition provides an ambiguous picture: its limited paradigm aligns it with regular PP-objects, its pure locational meaning does not.

The tests discussed in this section compared the prepositional inanimates both with regular PP-objects and with locational PP-adverbials. They showed that the inanimates under discussion pattern with PP-objects except for the semantics of their prepositions. Additional tests (not discussed), such as absence of a syntactic unit with the verb and R-extraction, which provide necessary conditions for PP-object status but do not separate them from PP-adverbials, also indicate that prepositional inanimates pattern with regular PP-objects. The conclusion, therefore, is that prepositional inanimates function as prepositional complements.

4 Verbal semantics

In the previous section we have arrived at a syntactic characterization of prepositional inanimates as PP-objects. I now turn to a semantic characterization of the verbs involved in the alternation. Table 2 lists the verbs that enter DOM in Dutch. All verbs that require an inanimate PP-object belong to the class of contact verbs (surface contact or contact by impact) as defined for English by Levin (1993). In English, these verbs (together with (some) verbs of cutting) enter the Body Part Possessor Raising construction (Fillmore 1970; Levin 1993; Dowty 2001, among others).⁷ A semantic characteristic of these verbs is that they all allow for

⁷ Dutch *cut* verbs don’t show the DOM alternation. Two verbs show limited exceptions. *Snijden* ‘to cut with a knife’ seems to have a default change of state meaning of ‘cut to pieces’, but also has a contact with impact reading in which it allows for an animate direct object only if reflexive, resulting in the meaning ‘cut oneself’. Verbs like *snijden* can take the same inanimate argument both as a direct object (*het vlees snijden* ‘cut the meat’) and as a PP (*in het vlees snijden* ‘cut in the meat’). This alternation differs from the one discussed in this paper as it involves the same argument and results in a difference in meaning which may be characterized in terms of the affectedness of the object, as in the conative alternation.

Table 2: Dutch DOM verbs with their English translations and verb class (the number between brackets refers to Levin's (1993) verb class).

Verb		Levin's (1993) class
<i>aanstoten</i>	'to knock against'	contact by impact (18)
<i>kloppen</i>	'to knock, to pound'	contact by impact (18)
<i>pikken</i>	'to peck with beak'	contact by impact (18)
<i>schoppen</i>	'to kick'	contact by impact (18)
<i>slaan</i>	'to hit, to beat'	contact by impact (18)
<i>tikken</i>	'to tick'	contact by impact (18)
<i>trappen</i>	'to kick'	contact by impact (18)
<i>bijten</i>	'to bite'	contact by impact (18)
<i>krabben</i>	'to scratch'	contact by impact (18)
<i>stompen</i>	'to stomp'	contact by impact (18)
<i>porren</i>	'to poke'	poke (19)
<i>prikken</i>	'to prick, to peck'	poke (19)
<i>steken</i>	'to stick, to sting'	poke (19)
<i>knijpen</i>	'to pinch'	surface contact (20)

part-to-whole spread in such a configuration, i.e., if you touch someone's leg you also touch that person (Dowty 2001). Where all CONTACT BY IMPACT and POKE verbs require an inanimate PP-object, we find some variation in the class of SURFACE CONTACT verbs. Some verbs (*aaien* 'to stroke', *likken* 'to lick', *strelen* 'to caress') in this latter class seem to be borderline cases in that they can take body parts as a direct argument. These usages all involve sensual contexts. The verbs *kussen* 'to kiss' and *aanraken* 'to touch' are unusual in that they take both animates and inanimates as direct objects.

Contact verbs are generally considered different from change-of-state verbs such as *break* (Fillmore 1970; Tsunoda 1981; Levin 1993, 2007; Washio 1997; Davis 2001; Koenig et al. 2008; Beavers 2011, among others). Where change of state verbs entail a change of state in the undergoer this does not hold for contact verbs. This difference is supported by linguistic evidence and often reflected by a difference in the (causal) decomposition of these verbs (e.g., Koenig et al. 2008). For instance, Fillmore (1970:125) notes that "surface-contact verbs assert the occurrence of some physical contact between two objects, but from the use of these verbs one cannot necessarily infer that the objects have undergone any essential change". Thus, whereas it is possible to deny a change of state in the window with a contact verb like *hit* (as in [14]), this results in awkwardness with a change of state verb like *break* (cf. [15], the same facts hold for Dutch). This difference finds an explanation if only the latter class of verbs entails a change of state in the undergoer. (examples [14] and [15] from Fillmore 1970:125)

- (14) *I hit the window with a hammer; it didn't faze the window, but the hammer shattered.*
- (15) *#I broke the window with a hammer; it didn't faze the window, but the hammer shattered.*

Another restriction discussed by Fillmore (1970:126) is that the passive participle of change of state verbs can be used as an adjective expressing a state (16a), whereas this is not possible for contact verbs, (16b) only has a passive (eventive) interpretation. A similar restriction holds for present perfects (Beavers 2011:341–342). The examples in (17) show that with a change of state verb the present participle can express a state with the *for*-adverbial expressing its duration. In the case of contact verbs, we only get an iterative interpretation that a hitting event occurred four days (in a row).

- (16) a. *The window was broken* [state]
 b. *The window was hit* [passive]
- (17) a. *The window has been broken for four days now.* [state]
 b. *#The window has been hit for four days now.* [iterative]

Further evidence for the absence of a change of state in the undergoers of contact verbs comes from Japanese. Washio (1997:5–6) shows that in this language only predicates that already entail a result state can enter the resultative construction. Contact verbs like *kick* are excluded from this construction.

- (18) **Kanozya-wa musuko-o azadarake-ni ket-ta.*
 she-WA son-ACC black.and.blue-DAT kick-PST
 'She kicked her son black and blue.'

On the basis of related typological evidence (e.g., in many languages contact verbs subcategorize for a less transitive frame, e.g., dative, oblique case on the object) Tsunoda (1981, 1985) argues that verb types can be ordered on the basis of their degree of transitivity (see also Malchukov 2005). In his hierarchy contact verbs rank lower than change of state verbs: effective action (change of state) > contact > pursuit. Absence of a change of state in the undergoer of contact verbs makes them semantically less transitive, and this lower degree of transitivity is reflected by a lower degree of formal transitivity. The PP-marking of inanimate undergoers with contact verbs in Dutch aligns with the latter observation. The clear direct object status of animate objects, by contrast, does not fit this typological pattern. This may suggest that the animacy of the undergoer can counteract the lower

transitivity of the verb, resulting in a regular transitive construction. This would fit a multifactorial account of transitivity as proposed by Hopper and Thompson (1980). In the next section I show that this analysis cannot be maintained and I will outline a different approach to the alternation in Dutch.

5 A paradigmatic analysis

So far, we have seen that Dutch contact verbs take animates as direct objects and inanimates as PP-objects. The verbs involved are characterized by the fact that they do not entail a change of state on behalf of the undergoer. In this section, I discuss the rationale behind this pattern.

Following a transitivity analysis along the lines of Hopper and Thompson (1980) or Tsunoda (1981) we could claim that the lower degree of transitivity of these contact verbs results in a lower degree of formal transitivity signaled by the prepositional expression of inanimates. Animates, being better patients, raise the semantic transitivity of a clause which in turn is mirrored by their higher formal transitivity. This kind of approach is very similar to that proposed for the Dutch alternation by Hoekstra (1992), who only considered the verb *slaan* ‘to hit’ in the light of a discussion orthogonal to the present one. Discussing the examples in (19) below he provides the following explanation: “While [(19b)], where *slaan* takes a single NP complement is grammatical, [(19a)] is not (except when interpreted as in a kind of fairy tale). We can make sense of this by saying that the NP object of *slaan* is a patient, and that inanimate entities do not qualify as patients” (Hoekstra 1992:163).

- (19) a. **Jan slaat het kopje.*
 John hits the cup
 ‘John is hitting the cup.’
 b. *Jan slaat zijn broertje.*
 John hits his brother
 ‘John is hitting his brother’

The explanation sketched by Hoekstra is incomplete in two respects. First, it leaves unexplained why in many situations inanimates are happy to function as patients, for instance with change of state verbs such as *break*. That is, excluding inanimates as patients across the board is much too strong. This objection also holds for an approach in terms of Hopper and Thompson’s transitivity parameters. Second, Hoekstra remains silent about the option to express inanimates as a PP-object in which they do function as the “patient”. As shown above, it is

not impossible to use these verbs with an inanimate undergoer. Moreover, inanimates can be licensed as a direct object with these verbs through the addition of an overt result state to the verb (as in the resultative construction):

- (20) *Hij beet de appel doormidden.*
 he bit the apple through.middle
 ‘He bit the apple in two halves.’
- (21) *Hij trapte zijn fiets kapot.*
 he kicked his bike broken
 ‘He demolished his bike.’

The examples in (20) and (21) are variants of examples (4b) and (13) discussed above with the two important differences (i) an explicit result state is added, *doormidden* ‘in two halves’ in (20) and *kapot* ‘broken’ in (21), and (ii) the inanimate undergoer is encoded as a regular direct object. The fact that inanimates can occur as the direct object when the result state is made explicit but not with the base verbs strongly suggests that inanimates (in Dutch) lack a quality to be kicked or bitten *per se*. In other words, it is not the case that inanimates do not qualify as “patients” across the board, this restriction holds for contact verbs only. There is something to these verbs in Dutch that conflicts with the feature of inanimacy. I propose that the key property here is *sentience*.

In what follows I take a decompositional perspective on semantic roles into Proto-Properties as proposed by Dowty (1991; see also Primus 1999; Ackerman and Moore 2001, among others). Instead of appealing to atomic semantic roles, Dowty (1991) proposes a cluster of Proto-Properties that define the proto-type categories Proto-Agent and Proto-Patient. Proto-Agent properties include volitional involvement, sentience, causing an event or change of state. Proto-Patient properties include undergoes change of state, causally affected, incremental theme. The proto-types are linked to the grammatical function of subject and direct object of an active transitive clause respectively. Hence, the argument with the highest number of Proto-Agent properties will be realized as the subject, in line with the so-called Syntagmatic Argument Selection Principle (Dowty 1991:576).

As stated, the relevant Proto-Property in Dutch DOM verbs is sentience. According to Dowty (1991:573) “[s]entience means more than a presupposition that an argument is a sentient being; it is rather *sentience with respect to the event or state denoted by the verb* [emphasis mine]: the objects of verbs like *elect*, *appoint*, *nominate* and *idolize*, *venerate* and *convict*, *acquit*, *exculpate* are necessarily human but are not entailed to know or perceive the relevant event”. Proto-Properties are entailments associated with predicates not with arguments. Hence, even

though animate (or human) entities will generally be perceived as being sentient entities, i.e., sentience presupposes animacy, it does not follow that every predicate that selects an animate argument entails sentience as a Proto-Property of this argument. The following quote from Dowty underlines this and is particularly relevant for the present discussion:

It is important here to distinguish entailments of the PREDICATE from what follows from any one sentence as a whole (e.g., entailments that may arise in part from NP meanings, etc.). For example, if *Mary slapped John* is true, and John is a normal human, then, slapping being the kind of action it is, we would conclude that John necessarily perceives something (and we would do likewise from the majority of sentences using *slap*). But it does not follow that the direct object of *slap* is entailed to have the P-Agent property of sentience, since we can also felicitously say *Mary slapped the table* or *Mary slapped the corpse*. However, the object of *awaken* does have the P-Agent entailment of sentience, as is revealed by the anomaly of *#Mary awakened the table/the corpse*. (Dowty 1991:572, fn 16)

From the fact that one can say *slap the table* but not *awaken the table* in English, Dowty infers that only the latter verb entails sentience of its object. Transferring this reasoning to Dutch in which neither of the sentences is well-formed, we must conclude that in this language both verbs entail sentience of their object, i.e., it is a Proto-Property associated with the undergoer argument. Given that sentience presupposes animacy, we only find animate direct objects with these predicates. Animates are capable of registering the effect of actions of hitting, biting etc. in a way that inanimates are not. Note that, although these verbs entail sentience on behalf of their direct objects, they do not entail them to undergo a mental change of state, as one can felicitously utter (22):

- (22) *Ik sloeg Jan, maar hij voelde er niets van.*
 I hit John, but he felt there nothing of
 'I hit John, but he felt nothing.'

The claim that Dutch contact verbs bear a sentience entailment on their object aligns with the fact that inanimates are interpreted as animated when used as a direct object, cf. also Hoekstra's fairy-tale interpretation of (19a) above. This effect is also observed in (23) where the direct object *het lijk* 'the corpse' receives an animated reading, i.e., we are dealing with a zombie (# indicates this re-interpretation). The opposite effect occurs when we use an animate undergoer in the prepositional construction. In (24) the animate NP *de man* is interpreted as inanimate (statue-like), an effect which is felt even stronger with proper names.

- (23) #*De gier* *beet* *het lijf*.
 The vulture bit the corpse
- (24) #*De gier* *beet* *in de man/Jan*.
 The vulture bit in the man/John

Thus, the encoding alternation between direct object and prepositional object discussed in Section 3 is mirrored by a semantic difference in terms of the Proto-Property of sentience. How to account for the observed pattern in Dowty's original framework which concerns the lexicalization of subjects and objects of one and the same predicate, i.e., syntagmatic argument selection? I claim that the Dutch pattern can be modeled, and lends further empirical support to, Ackerman and Moore's (2001) proposed extension to Dowty's proposal in order to handle variation in encoding of the same argument, e.g., variation in agent marking or in patient marking. Aside from syntagmatic argument selection they define a Paradigmatic Argument Selection Principle based on Proto-Properties: "Let $P(\dots, \text{arg}_i, \dots)$ and $P'(\dots, \text{arg}'_i, \dots)$ be related predicates, where arg_i and arg'_i are corresponding arguments. If arg_i and arg'_i exhibit different grammatical encodings and arg_i is more prototypical with respect to a particular proto-role than arg'_i , then arg_i 's encoding will be less oblique than arg'_i 's encoding." (Ackerman and Moore 2001:169)

The Paradigmatic Argument Selection Principle compares relative Proto-Properties of the same argument across related predicates, in our case the individual contact verbs. The one with the highest number of Proto-Patient Properties will be encoded as direct object, the other as (more) oblique. This general process is illustrated in (25) for variation in patient encoding:

- (25) PREDICATE_A ARG1 ARG2
 most Proto-Patient properties
 ⇒ OBJ
- PREDICATE_B ARG1 ARG2
 less Proto-Patient properties
 ⇒ OBL

Ackerman and Moore (2001) apply their Paradigmatic Argument Selection Principle to account for a number of encoding alternations including the one with Estonian partitive objects discussed in the introduction. As the object in (3b) is argued to have more Proto-Patient Properties than the one in (3a), the latter gets encoded in a more oblique, i.e., partitive, way. This analysis carries over to the

encoding variation found with Dutch contact verbs, making the Dutch pattern an instance of paradigmatic DOM.

Table 3 shows that sentience is the crucial Proto-Property distinguishing animates from inanimates. To get out the pattern in (1) we have to assume that sentience, although a Proto-Agent property in Dowty's original proposal, functions as an entailment with respect to the second argument of the Dutch contact verbs under discussion. As I have argued above this assumption seems to be well-motivated. Due to this predicate entailment animate undergoers of Dutch contact verbs end up with a higher number of Proto-Properties than inanimate ones and in accordance with the Paradigmatic Argument Selection Principle they are encoded in a less oblique way. Thus, given the assumption that sentience functions as a second argument (Proto-Patient) property with Dutch contact verbs and the fact that sentience presupposes animacy, the distribution of forms over animate (OBJ) and inanimate (PP) undergoers follows from the way the Paradigmatic Argument Selection Principle is operationalized, without any further assumptions.

As noted by Ackerman and Moore themselves, an analysis in terms of the Paradigmatic Argument Selection Principle is not predictive in nature but conditional. That is, "it only applies if a language possesses an encoding alternation with an associated semantic contrast. In such cases the principle predicts how the encodings and semantic properties will correspond to one another" (Ackerman and Moore 2001:69). Therefore, the Dutch alternation is not necessarily expected to be found in other (closely related) languages although this is not excluded. Indeed, it seems that some languages pattern like Dutch, e.g., German, Norwegian, whereas others do not, e.g., English. Crucially, the contrast between these two types of languages does not lie in the fact that paradigmatic selection is only active in the former, but in the fact that there is lexical difference in the semantics of contact verbs: only in the former languages these are associated with a sentience entailment on the undergoer argument. The origin of this lexical difference is unclear and deserves further research.

Table 3: Paradigmatic selection in Dutch DOM

Proto-Property	Animate	Inanimate
undergoes change of state	–	–
incremental theme	–	–
causally affected	–	–
stationary participant	+	+
does not exist independently of event or not at all	–	–
sentience	+	–
TOTAL	2 ⇒ OBJ	1 ⇒ OBL

The account outlined above for Dutch paradigmatic DOM in terms of Ackerman and Moore's Paradigmatic Argument Selection Principle closely resembles existing accounts of syntagmatic DOM such as the one by Aissen (2003). According to Aissen syntagmatic DOM patterns obey an iconicity principle (what is (un)marked in meaning is also (un)marked in form). Such iconicity considerations also underlie Horn's division of pragmatic labor which in turn inspired the formalism of weak bidirectional optimization of Blutner (2000; see also Blutner et al. 2006, for bidirectional accounts of DOM see Lee 2001; de Hoop and Malchukov 2007; de Swart 2006, 2007, 201; Primus 2012). The present account is fully amenable to this kind of formalization and brings along with it a clear operationalization of the notion of markedness of meaning lacking in many such accounts. Markedness, both of meaning and of form, is notoriously difficult to define (see Næss [2004] for a discussion of markedness in the realm of DOM). In the present situation this problem is (partially) countered by the definition of markedness of meaning in terms of a comparison of the number of Proto-Properties. An advantage of such a markedness approach is that it gives a natural account of the pattern in (23) and (24) where use of an animate with PP-marking results in an insentient reading and the use of an inanimate as a direct object in a sentient reading. This is exactly what one would expect under the analysis that the unmarked meaning (sentience) patterns with the unmarked form (direct object) and the marked meaning (insentience) with the marked form (PP).

6 The nature of animacy effects

In the introduction to this article I have introduced Dutch DOM as being concerned with animacy, i.e., the contrast between animates and inanimates. However, the alternation does not mark animacy as such, as this is an inherent property of noun phrases. In the previous section I have argued that instead the alternation encodes a difference in the number of Proto-Properties with a crucial role for the notion of sentience, a property reserved for animate entities. Thus, it may be that the animacy effect is in fact epiphenomenal. In order to conclude that one or the other is epiphenomenal we need examples that differentiate between the two. The crucial evidence would consist of animate arguments that are not sentient that get encoded as PP-objects or inanimate sentient arguments that are realized as direct objects. Although it is hard to unequivocally construct such examples, the ones in (23) and (24) point in the direction of a sentience-based account, making animacy epiphenomenal. Such a conclusion is not unprecedented. For instance, Folli and Harley (2008) reduce putative animacy constraints on grammaticality to the notion of *teleological capability*: “the inherent qualities and abilities of the

entity to participate in the eventuality denoted by the predicate” (Folli and Harley 2008: 190–191). One of their examples involves the correlation between animacy and agentivity which breaks down in the domain of verbs of sound emission. According to Folli and Harley, it is possible to use a verb like *whistle* both with an animate agent (*John whistled*) and an inanimate one (*The train whistled*) provided both are inherently capable of performing the action. Entities that are not teleologically capable require additional syntactic expression, e.g., *The bullet whistled *(into the room)*, reminiscent of the addition of a result state with the Dutch contact verbs discussed in (20) and (21) above.

Getting back into the realm of DOM, Primus (2012) argues that the influence of animacy on syntagmatic DOM patterns turns out to be less reliable than usually assumed. For instance, in Spanish, animacy is neither a necessary condition, as DOM occurs with certain inanimates (when occurring with inanimate subjects), nor a sufficient condition, as DOM with animate patients of ditransitive verbs can be suspended. Primus therefore proposes a view on DOM not in terms of animacy as a primitive but in terms of Dowtyian Proto-roles. She defends a co-argument dependency model which prefers a clear-cut asymmetric co-argument dependency: one argument has only agentive properties and the other argument only patient-properties (a modification of Dowty’s Syntagmatic Selection Principle). As she argues, many agentive properties – volition (or control), sentience, alienable possession, and certain patterns of motion – imply the involvement of a higher animate participant. By contrast, there is no link between animacy and Proto-Patients as no patient-like concept implies animacy on the part of the respective participant. In syntagmatic animacy-based DOM, then, the animacy of the Proto-Patient leads to a situation in which asymmetric co-argument dependency cannot be established unequivocally and hence, Primus hypothesizes, a differential object marker is licensed in exactly those cases. In other words, it is not animacy *per se* that counts but rather the semantic function of the object as it must be a potential Proto-Agent in the situation denoted by the predicate.

Primus’ account and the one outlined here for Dutch DOM are fully compatible. In fact, they are complementary. Together they provide a uniform account of animacy effects on DOM by reducing them to Dowtyian Proto-Properties. In cases of syntagmatic DOM the presence of a DOM marker results from a syntagmatic comparison of the Proto-Properties associated with the agent and the patient. In cases of paradigmatic DOM, as in Dutch, DOM marking is due to a paradigmatic comparison of properties associated with patients. A clear advantage of the present approach is that it can be extended to other cases of DOM such as the one found in Estonian, to instances of differential subject marking, and perhaps even to wider instances of case alternations such as the ones discussed by Tsunoda (1981, 1985; see Ackerman and Moore 2001: 171–173 for discussion). As stated

above, the reduction of animacy effects to Proto-Properties crucially hinges on the claim that animacy is epiphenomenal in the Dutch alternation with contact verbs. This question has only been partially answered in the positive. Nevertheless, accounts in terms of Proto-Properties provide a uniform and promising treatment of a variety of case alternations.

7 Conclusions

I have discussed a largely unnoticed encoding alternation observed with Dutch verbs of physical contact. At first sight, this alternation seems to involve the distinction between animate and inanimate undergoers. I have shown that whereas animates are realized as a direct object, inanimates are encoded as a prepositional complement. I have argued that this encoding distinction is an instance of so-called paradigmatic Differential Object Marking. The present DOM pattern can be best understood as a result of the Paradigmatic Argument Selection Principle according to which an argument with the higher number of Proto-Properties is encoded in a less oblique way. For Dutch contact verbs, unlike their English counterparts, sentience is a Proto-Property entailed of their patient argument. The fact that only animate entities can experience sentience explained the observed contrast of their encoding in comparison to inanimates.

The discussion in this paper advances the understanding of DOM systems related to animacy in two respects. On the empirical level it has shown that animacy-related DOM is not necessarily syntagmatic in nature, but can also be paradigmatic. On the theoretical side it complements the existing Proto-approach to syntagmatic animacy DOM formulated in Primus (2012). The result is a uniform account of (seemingly) animacy-driven DOM patterns in terms of Dowtyian Proto-Properties.

Acknowledgments: I gratefully acknowledge the financial support of the Netherlands Organization for Scientific Research (NWO grant 275-89-003 “The Status of Hierarchies in Language Production and Comprehension”). I thank two anonymous reviewers for their comments which helped to clarify the claims made in this paper. Furthermore, I would like to thank Dag Haug and Sander Lestrade for discussion and feedback.

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