SEMELFACTIVES IN ENGLISH AND IN HUNGARIAN: A COUNTABILITY-BASED ANALYSIS*

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1 Introduction: Parallels between the Nominal and Verbal Domains

The parallel most commonly drawn between the nominal and verbal domains is the one between the count/mass distinction and the telic/atelic distinction (cf. Taylor, 1977; Mourelatos, 1978; Bach, 1986; a.o.). In particular, telic predicates such as run to the bank have similar properties to count nouns like cow, while atelic predicates like run or run toward the bank share characteristics with mass nouns such as meat. Using the terminology of Krifka (1992), prototypical telic predicates and count nouns have neither cumulative nor divisive reference, while atelic predicates and mass nouns have both cumulative and divisive reference. However, this characterisation faces several issues. For one, the verbal domain often restricts cumulativity (and the sum operation in general) to temporally adjacent entities. Moreover, activities have been extensively argued to have divisive reference only to minimal parts (Dowty, 1979; Moltmann, 1991; Link, 1998; Zucchi and White, 2001; Champollion, 2015a, 2015b), what is known as the so called “minimal parts problem”.2

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1 A predicate P is cumulative iff it applies to sums of all entities it applies to. P has divisive reference iff it applies to all parts of any entity it applies to. Telic predicates and count nouns are sometimes taken to be quantized, i.e., they apply to no proper parts of any entity they apply to, but Krifka (1992) already pointed out that this is merely a simplification and is invalidated by predicates such as walk to the station (and see also the “puzzles” in Filip, 2000 and Zucchi and White, 2001). For simplicity, this paper will not deal with non-quantized predicates.

2 States, in contrast to activities, are generally assumed to be divisive down to points, but stative predicates in the verbal domain will not be discussed in this paper.
I will argue that through reference to minimal parts, the distinction between semelfactives and activities can be approached by analogy with a countability-related distinction. The core concept to be used with respect to the semelfactive/activity distinction will be neatness or natural atomicity. Informally, a predicate is neat or naturally atomic, if the minimal parts in its denotation do not overlap (although the two terms cannot always be used interchangeably). In the case of such predicates, minimal parts are generally accessible for reference. Table 1 summarises the verbal/nominal domain parallels based on this feature.

<table>
<thead>
<tr>
<th></th>
<th>Verbal</th>
<th>Nominal</th>
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<tbody>
<tr>
<td>Neat</td>
<td>telic; semelfactive</td>
<td>count; neat mass</td>
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<tr>
<td></td>
<td><em>run to the bank</em>; <em>jump</em></td>
<td><em>cow; cattle</em></td>
</tr>
<tr>
<td>Non-neat</td>
<td>activity</td>
<td>mess mass</td>
</tr>
<tr>
<td></td>
<td><em>run</em></td>
<td><em>meat</em></td>
</tr>
</tbody>
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Table 1. The neatness-based parallel between the verbal and nominal domains

1.1 Neatness in the Verbal Domain

My starting point is the analysis of Rothstein (2004, 2008), who exploited the notion of an atom or a minimal part to differentiate between semelfactives and activities. More precisely, she clearly draws on the notion of a natural unit (called a natural atom in Rothstein, 2010) of Krifka (1989) and argues that semelfactives, but not activities are naturally atomic. According to Rothstein (2004:186), “[a]n activity predicate P will denote a set of events P, and will contain a subset \( P_{\text{min}} \) which is the set of minimal events in its denotation. If a predicate has a semelfactive use, then there will be a natural atomic function which picks out the set \( P_{\text{min}} \).” This, she says, captures the intuitive idea that while the minimal elements of an activity like walking may overlap, this does not hold for minimal elements of, e.g., a jumping event. Semelfactive predicates, under Rothstein’s analysis, can refer to either summed or atomic events, i.e., they are ambiguous between a single-event and multiple-event interpretation. This does not hold for regular activities like walk, which cannot refer to their minimal events for lack of a principled way to individuate minimal events in a context. Thus, “the ambiguous predicates, those where the minimal events can be lexically accessed, are those where the minimal events are naturally atomic” (Rothstein, 2008:186).

It is important to note here that there are as many definitions of atomicity and minimal parts as there are authors (and more). Rothstein (2010) herself differentiated different notions of atomicity. I shall assume that atoms (relative to a predicate) and minimal parts designate the same set, namely, the minimal elements in the denotation of the relevant predicate relative to mereological (part-of) ordering. I shall treat natural atomicity as synonymous with neatness and take them to express that atoms in the denotation of a predicate do not overlap and are accessible to natural language constructions and cardinality-based comparison (though not necessarily counting).
1.2 Neatness in the Nominal Domain of English

Chierchia (1998), Rothstein (2010), and Landman (2011) argue that natural atomicity is not the characterising feature of count expressions in English; rather, “there is a clear tendency for naturally atomic objects to be denoted by count nouns” (Rothstein, 2010:361) so there is a close connection between natural atomicity and countability. This close connection is showcased by the fact that Krifka (1989:84) actually proposed that in English, the “reference to a natural unit [...] is built into” a count noun like cow. At the same time, it is well known that English has mass nouns (called neat mass nouns by Landman, 2011) which intuitively come with natural units, e.g., furniture.

Thus, over and above a countability feature, Landman (2011) introduces a neatness-based differentiation among nominal predicates that is contingent on whether or not the minimal generators (which correspond to the atoms of Rothstein, 2010 and the atoms/minimal parts as used here) overlap. Neat nouns (neat mass nouns like kitchenware and furniture, and count nouns such as chair) have a reference that is generated from non-overlapping minimal generators. These minimal generators are available for natural language. For instance, they can be accessed by “stubbornly distributive” modifiers (in the terminology of Schwarzschild, 2011) as in big furniture (used to refer to big pieces of furniture), and they are also available for cardinality-based comparison as in X has more furniture than Y (Barner and Snedeker, 2005). In contrast, non-neat nouns (i.e., in Landman’s terminology, mess mass nouns like salt and meat) have a reference with overlapping minimal generators, which are in turn unavailable for natural language constructions. For instance, they cannot be accessed by either “stubbornly distributive” modifiers (as in big meat) or in a cardinality-based comparison (as in more meat).

1.3 Parallels between the Nominal and Verbal Domains

Landman’s (2011) concept of neatness arguably corresponds to Rothstein’s (2004, 2010) concept of natural atomicity. Landman (2011:33) defines neat nouns as “nouns whose intension at every world specifies a [special kind of bounded generated set] whose set of minimal elements is non-overlapping”. Rothstein (2004:165) defines natural atomicity as having an “internal individuating structure”, and in the domain of events, predicates which are naturally atomic contain in their denotation minimal non-overlapping entities (p. 186). Formally, both concepts thus capture the idea that the minimal parts to which the relevant predicate applies do not overlap. Given Rothstein’s (2004, 2008) analysis of semelfactives as having non-overlapping minimal parts, semelfactives are the counterparts of neat mass nouns in the verbal domain, having a denotation that is closed under join but generated from non-overlapping atoms.

Figure 1 summarizes the parallels between nominal and verbal predicates based on countness/telicity and neatness/natural atomicity.\(^4\)

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\(^3\) Landman’s (2011) inherent atomicity that characterises the neat mass noun cattle, but not the neat mass noun kitchenware (resulting in different behaviour in comparison constructions), is different from natural atomicity, seeing that Rothstein (2010) explicitly argues that furniture (which appears to behave exactly like kitchenware in Landman’s comparison constructions) is naturally atomic.

\(^4\) Traditionally, semelfactives and activities are both considered atelic (Smith, 1991), but see, e.g., Rothstein (2004, 2008) for a different view.
2.1 Count Entails Neat in English

Despite the close correlation between neat and count nouns, neatness is “neither a necessary nor a sufficient criterion for count noun predicates” in English, according to Rothstein (2010:356). It is not sufficient, because, as noted above, there are neat nouns like furniture, kitchenware, and cattle that are non-count. Neatness is not necessary for countability either, as evidenced by the existence of count nouns like fence or wall that are not neat.

In opposition to this view, Landman (2011) regards neatness as necessary for countability (“count entails neat: \([-N] \Rightarrow [-C]\)”, p. 33), as illustrated in his classification of nouns in Figure 1. The way he proposes to handle counterexamples like fence is to assume that “we make [their minimal generators] not overlap by packaging” (Landman, 2011:34). For simplicity, I will follow Landman’s approach, disregarding such non-neat count nouns and assuming neatness to be necessary, but not sufficient, for a noun to be count in English.

2.2 Neat Also Entails Count in Hungarian

I propose that, in contrast to English, in Hungarian neatness is not only a necessary, but also a sufficient, condition for countability.\(^5\) That is, in Landman’s (2011) terms, neat entails count (\([+N] \Rightarrow [+C]\)) in Hungarian. The reason to assume this is that all Hungarian neat nouns I am aware of behave as count in all respects. In order to show this, I use pluralization and direct combination with numerals like 2 as a test for countability.

In both English and Hungarian, combination with numerals or the plural morpheme is (barring coercion) restricted to count nouns. In English, neither mess mass (*two blood(s),

\(^5\) Note that I agree with Csirmaz and Dékány (2014) and Schvarcz and Rothstein (2015) in that beside nouns that only have mass interpretations, Hungarian has nouns that, depending on their linguistic context, can have both mass and count interpretations. In what follows, “count” is used to describe lexemes rather than uses, and so “a count noun”, when applied to Hungarian nouns, should be read as equivalent to “a noun that has count usage”.

Figure 1. Landman’s (2011) classification of nominal predicates based on the binary countness [C] and neatness [N] features, and a parallel classification of verbal predicates using the corresponding binary features of telicity [telic] and neatness or natural atomicity [N]
*bloods), nor neat mass (*two furniture(s), *furnitures) nouns are allowed in such constructions. Hungarian shows the same restriction in these constructions to count nouns:

(1) két szék / *vér
two chair / blood
‘two chairs’ / ‘two portions of blood’ (intended)

(2) szék-ek / *vér-ek
chair-PL / blood-PL
‘chairs’ / ‘portions of blood’ (intended)

Nouns whose minimal generators are non-overlapping (i.e., neat nouns) appear to be all count in Hungarian according to these diagnostics, including nouns that are often listed as neat mass in the literature concerning English or other languages:

• They can be pluralized, e.g., evőeszköz(ök) ‘cutlery(.PL)’, bútor(ok) ‘furniture(.PL)’, ékszer(ek) ‘jewellery(.PL)’;
• They can directly combine with numerals, e.g., két evőeszköz/bútor/ékszer ‘two pieces of cutlery/furniture/jewellery’.

This is illustrated with the following attested examples for bútor ‘furniture’:

(3) Meggyújtotta a bútorokat, hogy ne fagyjon meg.
ignite.PST.3SG.DEF the furniture.PL.ACC that not freeze.SUBJ.3SG PRT
‘(S)he set the furniture on fire in order not to freeze to death.’

(4) Két bútorrendeltünk, egy kanapét és egy franciaágyat.
Two furniture.ACC order.PST.1PL one couch.ACC and one double.bed.ACC
‘We ordered two pieces of furniture, a couch and a double bed.’

None of the Hungarian counterparts of nouns often cited as examples of neat mass nouns in English (silverware, jewellery, footware, furniture, kitchenware, etc.) behave like mass nouns. While a genuine Hungarian neat mass noun may have simply eluded discovery so far, this category does appear to be empty in this language. Thus, it follows that there are no neat mass nouns in Hungarian, i.e., neatness is a sufficient criterion of countness in this language (neat entails count: [+N] ⇒ [+C]).

Since, as in English, neatness also appears to be a necessary condition of countness in Hungarian, it follows that neatness and countness go hand-in-hand in Hungarian ([+N] ⇔ [+C]).

2.3 Pluralization in the Nominal Domain in English and Hungarian

The morpho-syntactic and semantic aspects of pluralization in the nominal domain are similar in English and Hungarian. Pluralization is restricted to count nouns in both languages, as shown

6 Note that Hungarian numerals combine with the singular form of nouns, e.g. két szék(-*ek) ‘two chair(.PL)’.
8 https://hu-hu.facebook.com/kitti.boka/posts/890768297612500:0
9 But, as noted above, neatness is a necessary condition of countness only if, in line with Landman (2011), counterparts of nouns like wall, fence, line, and highway are dismissed as non-neat count nouns.
above. Singular count nouns in both English and Hungarian have only atoms in their denotation, as can be illustrated with singular definites: e.g., English the chair or Hungarian a szék ‘the chair’ can only refer to a single chair, but never a sum of chairs, irrespective of how salient a certain sum of chairs is. Reference to sums requires obligatory marking. This generally involves the plural morpheme, a numeral and/or a suitable determiner. Note, however, that, like English every, numerals and most of the determiners in Hungarian combine with the singular form of nouns (két/sok/néhány szék(-ek) ‘two/many/some chair(,pt.)’). The syntactic and/or semantic issue of the compositional derivation of the sum reference in these cases is of no consequence for the present purposes. One could hypothesize, for example, that numerals and determiners that syntactically combine with singular count nouns incorporate the semantics of the plural morpheme.

As for the interpretation of the plural morpheme (-{e}j in English and -(V)j\textsuperscript{10} in Hungarian), this paper follows the inclusive view (as, e.g., Krifka, 1989), assuming that it denotes Link’s (1983) pluralization operator ‘∗’, whereby plurals have both atoms and sums in their denotations.\textsuperscript{11} The inclusive view generally exploits a pragmatic explanation (as in Krifka, 1989:86) to account for the fact that plurals are generally used to refer to more than one individual: Since the plural form is semantically weaker than the singular form, using it implies the falsity of the stronger, singular form. The proper sum reference of plurals is therefore a scalar implicature under this view, and, as such, it is cancellable.\textsuperscript{12} In sum, as far as the nominal domain is concerned, the nominal domain, I assume a fairly standard account of pluralization. In what follows, I will extend this account to the verbal domain and argue for certain correspondences between the two domains.

3 Neatness and Countability in the Verbal Domain

3.1 Pure and Mixed Semelfactives

The main concern of the present paper is the semantics of semelfactives. This class of verbal predicates, which includes verbs like jump, flash, knock, wink, etc., was introduced as a class separate from Vendler’s (1957) classical verbal categories of states, activities, achievements, and accomplishments (Smith, 1991). Smith holds that semelfactives resemble activities in atelicity and achievements in punctuality.\textsuperscript{13}

\textsuperscript{10} Most Hungarian suffixes show a two- or three-way alternation according to the principles of Hungarian vowel harmony (Siptár and Tőrkenczy, 2000); hence the underspecified vowel V.

\textsuperscript{11} Under the non-inclusive view (e.g., Chierchia, 1998), plurals denote only sums. Cases such as If you have children, you are eligible for child benefit, in which plurals (in this case, children) do allow for singular interpretations, pose a challenge for the non-inclusive view.

\textsuperscript{12} An illustration for which is, e.g.:

A: Do you have children?
B: Yes, I do, one.

\textsuperscript{13} But cf. Comrie (1976) for the observation that semelfactives may often be construed as durative. An analysis of such durative construals of typically punctual predicates is proposed in Gyarmathy (2015).
In English, semelfactives very naturally assume iterative readings when combined with durative adverbials or the progressive:  

(5) In the morning, after drinking my lemon water, I will jump for about 5 minutes.

(6) John was jumping.

Thus, in English, *jump* can be used to refer to both a single jump, and, at least when combined with a durative adverbial or the progressive, an iterated process involving several jumps. This dual interpretation generalizes to all semelfactives.

In contrast, in most cases there is no natural iterative interpretation available for Hungarian semelfactives. Combination with durative adverbials thus results in anomaly, since only the punctual, semelfactive interpretation is available for these predicates:

(7) ??Mari 3 percig ugrott.
    Mary 3 minutes.until jump(SEM).PST
    Intended: ‘Mary jumped for 3 minutes.’

(8) ??Mari 3 percig tüsszentett.
    Mary 3 minutes.until sneeze(SEM).PST
    Intended: ‘Mary sneezed for 3 minutes.’

The same applies to the progressive form of semelfactives in Hungarian: Only the slow-motion single-event reading is generally available, whereas an iterative interpretation is rendered impossible:

(9) Épp ugrottam, amikor...
    just jump(SEM).PST.1SG when...
    ‘I was in the process of a single jump, when...’

(Not available: ‘I was jumping, when...’)

In order to get the iterative interpretations, a corresponding iterative predicate must be used:

(10) Épp ugráltam, amikor...
    just jump(ITR).PST.1SG when...
    ‘I was jumping (iterative) when...’

(11) Mari 3 percig ugrált.
    Mary 3 minutes.until jump(ITR).PST
    ‘Mary jumped for 3 minutes.’

(12) Mari 3 percig tüsszögött.
    Mary 3 minutes.until sneeze(ITR).PST
    ‘Mary sneezed for 3 minutes.’

---

14 The iterative reading is the salient – and probably even the exclusive – one in the case of modification by durative adverbials, while the progressive allows for both iterative and “slow-motion” readings of semelfactives (Gyarmathy, 2015).

15 http://thebombshellfiles.com/tag/health-wellness/
Hungarian typically has two different lexical entries: for the single event, semelfactive reading, and for the iterative, process-type interpretation – more precisely, different suffixes are attached to the same bound morpheme to indicate semelfactivity or iterativity. For instance, \textit{(fel)villan} ‘flash once’ contrasts with \textit{vilog} ‘flash (iterative)’, and \textit{(meg)csillan} ‘sparkle once’ contrasts with \textit{csillog} ‘sparkle continuously’. The suffixes -\textit{Vn} vs. -\textit{Vg} are fairly common (but not productive) with this set of verbal roots – although they are far from the exclusive means to enforce the respective readings.\footnote{Another well-known suffix, for example, which endows semelfactives with an iterative reading is the frequentative/diminutive \textit{-gVt}. This suffix can even be stacked onto other suffixes; e.g., in \textit{(fel)villangat} ‘flash continuously (but not too frequently)’}. However, the fact remains that in each case, either the single event or the iterative reading is available, but never both.

What the observed facts suggest about the semantics of semelfactives in English and Hungarian is the following. In English, Rothstein (2008:182) explicitly observed that “all semelfactive predicates have a homonymous activity reading”. For this reason, instead of deriving the activity (iterative) reading from the single-event interpretation of semelfactives, Rothstein (2004, 2008) proposes a reverse solution and takes the activity (rather than the semelfactive) reading as the basic one. She proposes that predicates like \textit{jump}, \textit{flash}, etc. have in their denotation both single events (atoms) and iterations (sums); the only difference between “regular” activities such as \textit{walk} and semelfactives is that the atoms of regular activities overlap and are consequently inaccessible in natural language use, while semelfactives have non-overlapping minimal parts, which are accessible (cf. §1). Thus, predicates such as \textit{jump}, but not predicates like \textit{walk}, have single event interpretations. This results in a close parallel between semelfactives like \textit{jump} and neat mass nouns such as \textit{furniture}: The two have both atoms and sums in their denotation, and the predicate may refer to atoms due to the fact that these atoms are non-overlapping. The converse holds for regular activities such as \textit{walk} and mess mass nouns like \textit{blood}: Their atoms are overlapping and are unavailable for reference through these predicates. Hence the analogy between these verbal and nominal predicates presented in Table 1.

In contrast to English, very few (if any) semelfactive predicates have a homonymous activity reading in Hungarian, as already seen. On the other hand, almost all semelfactives have an activity counterpart, with a handful of strategies to mark these two interpretations, the most typical of which are illustrated in Table 2.

<table>
<thead>
<tr>
<th>SEMELFACTIVE</th>
<th>ACTIVITY</th>
<th>TRANSLATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-n(t)</td>
<td>-Og</td>
<td>‘spurt’</td>
</tr>
<tr>
<td>fröccsen</td>
<td>fröcsög</td>
<td></td>
</tr>
<tr>
<td>\textit{meg}-V</td>
<td>\textit{V}</td>
<td></td>
</tr>
<tr>
<td>megcsóvál</td>
<td>csóvál</td>
<td>‘wag’</td>
</tr>
<tr>
<td>\textit{V}</td>
<td>\textit{V-gAt}</td>
<td></td>
</tr>
<tr>
<td>kacsint</td>
<td>kacsintgat</td>
<td>‘wink’</td>
</tr>
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</table>

\textbf{Table 2}. Some semelfactive and activity (iterative) counterparts in Hungarian

The question is how best to capture the semantics of semelfactives and iteratives in Hungarian. While in most cases, as already seen, semelfactive and iterative interpretations are associated with distinct lexical entries, Kiefer (2009) and É. Kiss (2011) argue that some
Semelfactives in Hungarian also have iterative interpretations. In the words of É. Kiss (2011:125):

\[
tüsszent \text{ 'sneeze'}, \ pislog \text{ 'blink'}, \ köhög \text{ 'cough'}, \ kacsint \text{ 'wink'}, \ böfög \text{ 'burp'}, \text{ etc. may denote single punctual events but can also express the series of punctual events.}
\]

This would entail that Hungarian has two kinds of semelfactives:

- **pure semelfactives** (like *pislant* ‘*blink(SEM)*’), which only have single-event interpretations, and
- **mixed semelfactives** (like *köhög* ‘cough’), which have both single-event and iterative interpretations.

Based on the reverse thinking of Rothstein (2004, 2008) presented above concerning English semelfactives, the basic reading of semelfactives with iterative uses would be the iterative one, while pure semelfactives would have atoms only in their denotation, similarly to singular count nouns.

However, it is worth examining in more detail the predicates that have been proposed as mixed semelfactives (as labeled in the current paper). One difference between pure and mixed semelfactives proposed by É. Kiss (2011:126) herself is that “[p]urely semelfactive verbs cannot take time adverbial phrases of duration”, hence the infelicitousness of (13).

(13) ??Sokáig *pislantott.*
    for.long blink(SEM).PST
   Intended: ‘S(he) blinked for a long time.’

(14) Sokáig *pislogott.*
    for.long blink(ITR).PST
   ‘S(he) blinked for a long time.’

Based on this adverbial test, *tüsszent* ‘sneeze’ and *kacsint* ‘wink’, taken from the list of putative mixed semelfactives, are in fact pure semelfactives (pace Kiefer, 2009; É. Kiss, 2011) as evidenced by the oddity of (15).

(15) ??Sokáig *kacsintott / tüsszentett.*
    for.long wink(SEM).PST / wink(SEM).PST
   Intended: ‘S(he) winked/sneezed for a long time.’

Based on an inspection of a list of semelfactives (an extension of the one presented in É. Kiss, 2011), it is only verbs with the -Og suffix that can have both iterative and semelfactive uses, in particular, the predicates *pislog* ‘blink’, *köhög* ‘cough’, *böfög* ‘burp’, *villog* ‘flash’, (and I would also add *dobog* ‘beat, throb’ to the list).

Note, however, that (pace É. Kiss, 2011) a single-event reading of these predicates is much harder to get in Hungarian than it is in English.\(^{17}\)

\(^{17}\) There are also lexical differences: A single-event reading is easier to get with *pislog* ‘wink’ and *böfög* ‘burp’ than with the other verbs. In this paper I continue to gloss verbs with the -Vg with “ITR” to differentiate them from their strictly semelfactive counterparts with the -Vnt suffix (e.g., *pislant* ‘*blink(SEM)*’).
(16) Zoltán egy órakor köhögött.
Zoltán one hour.at cough(ITR).PST
‘Zoltán {was coughing/?coughed once} at one o’clock.’ (iterative > single event)

Assuming a semantic analysis of these mixed semelfactives along the lines proposed above (i.e., as having non-overlapping atoms and sums thereof in their denotation), a possible explanation of the iterative interpretation being favoured in these predicates can arise from a comparison to the English singular/plural competition à la Krifka (1989) in the nominal domain: Mixed semelfactives and their proper semelfactive counterparts (e.g., köhint ‘cough(SEM)’) form a Horn-scale, and the use of the weaker alternative (the mixed semelfactive) implies that the use of the stronger alternative (the pure semelfactive with only atoms in its denotation) would have resulted in falsity.

Thus, the favoured iterative interpretation of köhög ‘cough(ITR)’ in (16) is the result of a scalar implicature just like the favoured plural interpretation of children in English. This can also explain why such a preference for the iterative reading is missing in English semelfactives: These predicates (like jump, cough) have no pure semelfactive counterparts, and so no scalar implicature along the lines presented above arises.

In sum, so far two types of Hungarian semelfactives have been discussed: pure and mixed. Pure semelfactives only have atoms in their denotation, while mixed semelfactives are similar to their English counterparts in having both (non-overlapping) atoms and sums in their denotation. Hungarian mixed semelfactives have a preferred plural interpretation, which results from pragmatic competition with their pure semelfactive counterparts.

However, Hungarian appears to have a third class of verbal predicates with a neat verb root (i.e., a verb root whose denotation is generated from a non-overlapping set of atoms), namely, pure iteratives. These predicates, as I will argue below, only have sums, but not the atoms of their verbal roots, in their denotation. Thus, Hungarian has the following three types of verbal predicates with neat verb roots:

- Pure semelfactives like pislant ‘blink(SEM)’, which only have atoms in their denotation;
- Mixed semelfactives/iteratives such as köhög ‘cough’, which have atoms and sums in their denotation, like English semelfactives;
- Pure iteratives like bööffentget ‘burp(ITR)’, ugrál ‘jump(ITR)’, which only have proper sums in their denotation.

I propose to account for these facts by assuming that while there is a single plural marker in the nominal domain (namely, -Ok, ‘∗’), there are two kinds of plural markers in the verbal domain in Hungarian:

- Proper iterative markers like -gAt, which encode Link’s (1983) proper pluralization operator C;
- Improper iterative markers like -Og, which (like the plural marker in the nominal domain) encode Link’s (1983) pluralization operator ∗.

Evidence for this classification and analysis comes from combination with numeral adverbials and pseudo-objects to be presented below. In essence, the Hungarian verbal domain has both inclusive and exclusive pluralizers, while only the inclusive pluralizer view is adopted here for the nominal domain.
It should be noted that a comprehensive analysis of the semantics and morpho-syntax of the relevant suffixes under discussion is beyond the scope of this paper. It is, for example, an open question if the suffix -gat/-get is a single lexical entry, or whether it is ambiguous between diminutive/frequentative/iterative interpretations. The suffix -eg/-og/-ög only combines with bound semelfactive morphemes, while -gat/-get combines with all verb stems. -ál/él (as in ugr-ál ‘jump(ITR)’) is a general process-forming suffix, which, similarly to -eg/-og/-ög, combines with bound morphemes. It is, however, not the goal of the present paper to offer an exhaustive morpho-syntactic and semantic analysis of iterative and process-forming suffixes; rather, it aims only to capture the common core of iterativity in the semantics of these suffixes as well as the ways in which pluralization is realized in the verbal domain.

3.2 Plural Operators in the Verbal Domain

One piece of evidence for the proposal outlined in the foregoing section comes from Hungarian pseudo-objects. The pseudo-object egyet ‘one.ACC’ can attach to intransitive, unergative verbs that lack verbal particles (cf. Kiefer, 1992; Piñón, 2001; Csirmaz, 2006; Halm 2012; a.o.). Its contribution can be of two types:

a) It can result in a diminutive-like interpretation (hereinafter: DIM), or
b) It can result in the verbal predicate referring to minimal parts (henceforth: ATOM).

The first use of the pseudo-object is in combination with regular activities like fut ‘run’:

(17) Péter futott egyet.
    Peter run.PST one.ACC
    ‘Peter did some running.’ / ‘*Peter made a single running movement.’ (DIM)

Since the atoms in the denotation of regular activities such as fut ‘run’ overlap, they are not accessible to natural language constructions (cf. §1); hence the unavailability of the ATOM reading for the pseudo-object. In contrast, this interpretation is of course available to pure semelfactives (neat predicates with non-overlapping atoms that are thus accessible to natural language constructions), as exemplified in (18).

(18) A fény villant egyet.
    The light flash(SEM).PST one.ACC
    ‘The light flashed once.’ / ‘*The light flashed for some time.’ (ATOM)

As (18) shows, however, the DIM interpretation is unavailable for pure semelfactives, whose denotation includes only atoms, as argued above. This suggests that, while the precondition for an ATOM interpretation is that the modified predicate should have non-overlapping atoms in its denotation, a DIM reading requires reference to sums, whatever its exact semantics is.

That there is a three-way distinction between pure semelfactives, mixed semelfactives/iteratives, and pure iteratives is indicated by the fact that while the former only allow an ATOM interpretation, mixed semelfactives allow both ATOM and DIM interpretations (19), and pure iteratives only enable a DIM reading (20).

(19) Józsi köhögött egyet.
    Józsi cough(ITR).PST one.ACC
    ‘Józsi coughed once.’ / ‘*Józsi coughed for some time.’ (mixed semelfactive; ATOM/DIM)
Let us now turn to the semantics of verbal roots and different suffixes. My starting point is the account of Rothstein (2010), arguing that nominal roots in English denote what she designates \( N_{\text{root}} \), a set of individuals closed under the join (or sum) operation. Thus, if \( A \) is the set of atoms of a noun \( N \), then \( N_{\text{root}} = \star A \). My proposal in the vein of Rothstein (2010) is that verbal roots denote some \( V_{\text{root}} \), a set of events closed under join and generated from a set of atoms. For example, let us take the activity and verb root \( \text{ráz} \) ‘shake’ (from which the pure semelfactive \( \text{meg-ráz} \) ‘shake(SEM)’ can be derived). It denotes a set generated from a set of non-overlapping atoms. This is indicated by the fact that it receives an activity (iterative) interpretation in neutral cases, but is nevertheless compatible with a single-event interpretation when combined with the pseudo-object \( \text{egyet} \) (on the ATOM reading, though it is also compatible with the DIM reading).

The semantics I propose for semelfactive markers (-An, -dUl, -n(t) and prefixes like \( \text{meg-} \)) is the following.\(^{19}\) These affixes denote the operator \( \text{Atoms} \) that outputs the set of atoms in a set (Nouwen, 2015; in the spirit of Link, 1983). Thus, \( \text{Atoms}(V_{\text{root}}) \) is the set of singular events in \( V_{\text{root}} \). When these affixes combine with verbal roots with non-overlapping atoms, a verb with a singular reference is derived. For instance, let us derive the meaning of pure semelfactives \( \text{megráz} \) ‘shake(SEM)’ and \( \text{köhint} \) ‘cough(SEM)’:

\[
\text{ráz} \text{‘shake} \text{root’} + \text{meg-} \lambda V.\text{Atoms}(V) \rightarrow \text{meg-ráz} \text{‘Atoms(shake\text{root})’}
\]

\[
\text{köh-} \text{‘cough} \text{root’} + -n(t) \lambda V.\text{Atoms}(V) \rightarrow \text{köhint} \text{‘Atoms(cough\text{root})’}
\]

The resulting verbs have only atoms in their denotation; hence the strictly singular reference pure displayed in semelfactives.

The semantics I propose for “proper iterative” markers (primarily -gAt) is that they denote Link’s (1983) proper pluralization operator \( ^c \). Based on Link (1983), \( ^c P(a) \leftrightarrow *P(a) \land a \notin \text{Atoms}(P) \), i.e., \( ^c P \) is the set of non-atomic sums in \( *P \), or, in other words, \( ^c P = *P \setminus \text{Atoms}(P) \). Thus, proper iterative markers in essence output “pluralia tantum verbs”.

If these markers are applied to some verbal root, then \( ^c V_{\text{root}} \) contains only proper summed events (relative to the atoms of \( V_{\text{root}} \)). Using \( \text{ráz-} \) again as an illustration, we have the following derivation:

\[^{18}\text{As is often the case, the join operation needs to be restricted here in the domain of events to the join of temporally adjacent events.}\]

\[^{19}\text{Note again that this proposal is of course an extreme simplification; the semantics of these (and other) affixes is much more complex, and possibly involves ambiguities. For example, \text{meg-} \text{most often functions as a telicizer (cf. e.g., ebédel ‘have lunch(ateletic)’ vs. meg-ebédel ‘have lunch(telic)’).}\]
If proper iterative markers are applied to a pure semelfactive, again a predicate with only summed events in its denotation is derived, since $C_{Atoms}(V_{root}) = C_{V_{root}}$. The following derivation is an example:

\[(25) \quad \text{kacs-int } '\text{Atoms}(\text{wink}_{\text{root}}) + -gAt 'λV'C\text{V}' \rightarrow \text{kacsintgat }i^C\text{wink}_{\text{root}}'\]

My proposal for the mixed or “improper” iterative marker -Og,\(^{20}\) which allows for both semelfactive and iterative interpretations, is that it denotes Link’s (1983) pluralization operator *, and has the morpho-syntactic restriction enabling it to attach to bound stems only. *V is the set resulting from closure under join of V. As such, application of this operator to V\(_{\text{root}}\) is empty, since $*V_{\text{root}} = V_{\text{root}}$, a set closed under join. Let us exemplify this with the verb köhög ‘cough’:

\[(26) \quad \text{köh- } '\text{cough}_{\text{root}}' + -Og 'λV.'V' \rightarrow \text{köhög }'\text{cough}_{\text{root}}'\]

This verb is thus compatible with both singular and plural reference (with the plural reference being the preferred one via scalar implicature).

Given the morpho-syntactic restriction that -Og can only attach to bound verbal stems, and given that (according to the analysis proposed here) all verbal roots denote some V\(_{\text{root}}\) closed under join, the prediction is that this suffix can never attach to a predicate whose denotation contains only atoms (i.e., $\text{Atoms}(V_{\text{root}})$). Since, to my knowledge, there are no other affixes in Hungarian that, like -Og, encode *, pure semelfactives (all of which are derived and none of which is a bound stem) can consequently be pluralized only by proper iterative markers that encode the proper pluralization operator $^C$.

### 3.3 Verbal Counting in Hungarian

As shown in §2, two of the most prominent characteristics of count nouns (which, as I argued, is the same set as neat nouns in Hungarian) are the fact that they can be pluralized and the fact that they can combine with numerals. In the foregoing, I looked at the (morphological) pluralization of neat verbs in Hungarian, and I shall now turn to their combination with numerals. Like Hungarian neat nouns, Hungarian neat verbs with singular interpretations can combine with numerals, and these numerals can access (i.e., count) the minimal parts in their denotation (cf., e.g., Landman, 2011). This is illustrated in the following example, where the flashing atoms (within a contextually specified time interval) are counted.

\[(27) \quad \text{Kétszer villant.} \quad \text{(counting atoms)}\]

\[\text{two.times flash(SEM).PST} \quad \text{‘It flashed twice.’}\]

However, counting in the verbal domain differs from counting in the nominal domain in that counting of atoms is not the only possibility for numerals: It is also possible to count maximal

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\(^{20}\) O here stands for vowels of mid height, i.e., e, o, ö. I do not use the more general V (for vowel) here to avoid confusion with V for ‘verb’.
contiguous eventualities, where “maximal” is understood as in Koenig and Muansuwan (2000),\(^{21}\) that is, \(e\) is maximal relative to a predicate \(P\) iff \(e \in P\) and \(e\) is not a proper part of any actual contiguous \(P\)-eventuality. Thus, in this case, what is counted is maximal sums within a specific context. This is illustrated in the following example.

(28) \textit{Kétszer villogott.}  
\hspace{1cm}two.times \textit{flash(\textsc{itr}^\textsc{c}).pst} \hspace{1cm} ‘It flashed twice.’ / ‘It was flashing twice.’ \hspace{1cm} (counting atoms/sums)

As (27)–(28) show, different types of neat verbs allow for different ways of counting. More precisely, counting maximal sums in the denotation of a pure semelfactive is equivalent to counting atoms, in a weak sense of “sum” here (which also includes atoms, since, e.g., the join of some atom \(a\) with itself is \(a\), the join/sum operation being idempotent). Given that a pure semelfactive \(P\) only contains atoms, maximal sums within the denotation of \(P\) are the atoms themselves. (The same holds for telic predicates.)

On the other hand, it is not surprising that counting atoms is not an available option for pure iteratives:

(29) \textit{Kétszer ugrált / kacsintgatott}  
\hspace{1cm}two.times \textit{jump(\textsc{itr}^\textsc{c}).pst} \hspace{1cm} \textit{wink(\textsc{itr}^\textsc{c}).pst} \hspace{1cm} ‘(S)he was engaged in jumping/winking twice.’ \hspace{1cm} (counting sums)

Note that an \textit{atom} is simply a minimal element relative to the part-of relation in the denotation of a predicate. As such, e.g., the sum \(a \mathbin{+} b\) of two original atoms \(a\) and \(b\) of \(\textsc{v}^\textsc{c}\) is in turn an atom in \(\textsc{c}^\textsc{v}\). However, these atoms of pure iteratives (which are proper sums of the atoms of their verbal roots) cannot be counted. The reason for this is that they obviously overlap: If, e.g., \(a+b, a+c \in \textit{Atoms}^\text{\textsc{c}^\textsc{v}}\), then the atoms \(a+b\) and \(a+c\) overlap, since \(a\) is a part of both. Thus, while the denotation of pure iteratives is also atomic, their atoms, like those of regular activities, overlap, and are therefore not suitable for counting.

Contrasting these Hungarian facts with English, it can be seen that all semelfactives can combine with numerals on a “counting of atoms” interpretation (cf. Rothstein, 2008):

(30) John jumped/winked twice.

This is not surprising given that English semelfactives are assumed to denote some \(\textsc{v}^\text{root}\) with non-overlapping atoms just like Hungarian mixed semelfactives. While a counting of atoms is the preferred interpretation when combining English semelfactives and Hungarian mixed semelfactives with numerals, a counting of sums appears to be available given appropriate contextual support. E.g., if, as part of an exercise regimen, John needs to perform four series of ten jumps, then one can say \textit{John jumped twice today so far} in order to convey that he performed two series of ten jumps.

Let us now turn to an account of counting in English and Hungarian. I shall assume that counting has the semantic precondition that the predicate modified by the numeral be neat, i.e.,

\(^{21}\) Different authors define maximality differently; e.g., Altshuler’s (2014) definition (using \textit{stages}) restricts maximality to dynamic events and uses a modalized definition, while Koenig and Muansuwan (2000) use an extensional definition and do not restrict the maximality operator to particular predicate classes.
have non-overlapping atoms.\textsuperscript{22} Since count nouns are neat (in the nominal domain), as are telic predicates (in the verbal domain), this requirement is satisfied by prototypical count and telic predicates, respectively. In addition, both English and Hungarian lay morpho-syntactic constraints on counting in the nominal domain: In English, combination with numerals is restricted to morphologically plural nouns, while counting in Hungarian is restricted to morphologically non-plural nouns. None of these languages lays morpho-syntactic restrictions on counting in the verbal domain. As a consequence, since only count nouns can be pluralized, counting is restricted to count nouns in English (and is not allowed for neat mass nouns like \textit{furniture}). In Hungarian, all neat nouns are count, and as such, restriction to non-plural forms will not lead to the combination of mass nouns and numerals (since Hungarian mass nouns do not satisfy the neatness requirement of counting).

As for the semantics of counting, while there is one way of counting in the nominal domain, namely, the counting of atoms in the denotation of the relevant predicate, there appear to be two ways of counting in the verbal domain (namely, counting of atoms or of maximal sums). This appears to suggest that – just as I argued there were two kinds of pluralizers (\textsuperscript{*} and \textsuperscript{C}) in the verbal domain in Hungarian – there are two kinds of (readings of) numerals. On this view, \textit{kétszer} ‘twice’, would be ambiguous between $2^{\text{ATOM}}$ and $2^{\text{SUM}}$. One piece of evidence supporting this ambiguity is that, while mixed semelfactives like \textit{köhög} are compatible with both types of counting, when coordinated with a predicate allowing for only one or the other, that particular reading becomes highly preferred:\textsuperscript{23}

\begin{verbatim}
(31) Kétszer pislantott és (kétszer) köhögött.
    two.times blink(SEM).PST and two.times cough(ITR*).PST
    ‘(S)he blinked and coughed(\textit{atoms/??sums}) twice.’

(32) Kétszer futott és (kétszer) köhögött.
    two.times run.PST and two.times cough(ITR*).PST
    ‘(S)he ran and coughed(??\textit{atoms/sums}) twice.’
\end{verbatim}

While this may be simply a pragmatic effect of not varying the interpretation of the same word in a sentence, the ambiguity test of \textit{X, but not X} (Zwicky and Sadock, 1975) also supports the proposed account:

\begin{verbatim}
(33) Kétszer köhögött de összesen nem kétszer köhögött.
    two.times cough(ITR*).PST but in.total not two.times cough(ITR*).PST
    ‘She coughed twice, but she didn’t cough twice in total [but several times during the two coughing fits].’
\end{verbatim}

Assuming that numerals combining with verbal predicates have both atom-counting and maximal sum-counting readings, how can they be modelled? The counting of atoms is relatively straightforward: As argued above, it is simply the atoms in the denotation of the predicate that are counted, provided all the atoms are non-overlapping. For example, the $2^{\text{ATOM}}$ reading of \textit{kétszer} ‘twice’ can be modelled as follows:

\begin{verbatim}
22 For the present purposes, I ignore count interpretations of mass nouns, such as kind interpretations and packaging (as in \textit{John drank 3 beers at the pub}). These interpretations all result in non-overlapping atomicity, whereby even mass nouns can satisfy the neatness constraint in certain contexts.

23 The interpretation of ‘twice P and Q’, where a complex P&Q eventuality occurred twice, is disregarded here.
\end{verbatim}
(34) \( \lambda P. |\{x : x \in \text{Atoms}(P)\}| = 2 \), provided no elements in \( \text{Atoms}(P) \) overlap (undefined otherwise).

This allows counting of atoms in the case of pure semelfactives (e.g., \textit{villan} ‘flash(\text{SEM})’), mixed semelfactives/iteratives (e.g., \textit{villog} ‘flash(\text{SEM}*)’), and telic predicates (e.g., \textit{kimegy a kertbe} ‘go out into the garden’).

In order to get the “counting of maximal contiguous eventualities” interpretation, there is a need for an operator which takes a set of eventualities and outputs the subset including all and only the maximal contiguous eventualities. Let us call this operator \( \text{maxc} \) and define it as follows:

\[
\text{maxc} P = \{x \subseteq P : \not\exists y,z (y \in P \land y \neq x \land z \neq x \land y = x+z)\}
\]

Since the join operation \( + \) is, in the domain of eventualities, restricted to temporally contiguous eventualities (cf. fn. 18), \( \text{maxc} P \) contains maximal contiguous \( P \)-events. The 2\text{SUM} reading of \textit{kétszer} ‘twice’ can then be defined as follows:

(36) \( \lambda P. |\{x : x \in \text{maxc} P\}| = 2 \)

In the case of atelic predicates and pure iteratives, this will result in counting maximal eventualities, as in (32) and (29). For lack of non-overlapping atoms, this is the only interpretation in these cases. In the case of telic predicates, as in \textit{Kétszer futott a bankba} ‘(S)he ran twice into the bank’, and pure semelfactives, as in (27), (36) results in the same interpretation as (34), since these predicates have atoms and no proper sums in their denotation.

In the case of mixed semelfactives (including English semelfactives), (36) results in a maximal sum-counting reading, but counting of atoms via (34) is also available, hence the ambiguity of (28) and (30).

4 Summary and Conclusion

In the present paper, I primarily analysed Hungarian semelfactive predicates from the perspective of comparing English and Hungarian, as well as the nominal and verbal domains. I first argued that neatness, i.e., non-overlap of atoms, appears to be more relevant to “countness” (in the loosest sense) in Hungarian than in English. First, concerning the nominal domain, I argued that in Hungarian but not in English, neat entails count, and there are thus no Hungarian neat mass nouns. Second, in the verbal domain, many verbs with neat verbal roots have both “singular” and “plural” forms, just as neat nouns have singular and plural forms. That neatness is sufficient for counting in Hungarian is also showcased by the fact that both singular neat nouns and “singular neat verbs” can combine with numerals, which can access atoms for counting purposes.

However, I also argued for important differences between the nominal and verbal domains. While plural formation on the set of count nouns is productive, none of the operations between roots, semelfactives, and iteratives that I analysed seems fully productive. (Plurality is instead typically expressed at the phrase level in the verbal domain, e.g., with numerals.)

An important argument I put forth is that while there is a single plural morpheme and a corresponding pluralization operator in the nominal domain (-\textit{Ak} “+”), there are multiple iteration

\[ \text{footnote} \]

This is not true for non-quantized telic predicates like \textit{eat at least 3 sandwiches} (cf. Filip, 2000, Zucchi and White, 2001), but as in the case of atelic predicates, (36) correctly results in these cases in counting maximal events, while (34) correctly cannot apply given the overlapping atoms of non-quantized predicates.
markers encoding two different kinds of pluralization operator in the verbal domain. These markers most commonly encode the proper plural operator C, but there is (at least) one which encodes the plural operator *.

By contrasting English and Hungarian, quite a few commonalities could be distilled: e.g., count nouns and telic predicates are neat (barring special non-quantized cases which were disregarded for the present purposes) and their atoms are available for natural language constructions; mess mass nouns and regular activities have overlapping atoms which are therefore unavailable for natural language constructions.

Over and above this, there are some parallels between the nominal and verbal domains in both languages. Both nominal and verbal roots denote a set closed under join and generated from a set of atoms (i.e., *A for some set of atoms A), and nominal and verbal predicates are then derived from these basic roots. English has the following kinds of predicates:

- count nouns (like chair) and telic predicates (like arrive) are neat and denote some set of atoms A;
- mess mass nouns (like mud) and regular atelics (like run) are non-neat and denote some *A with overlapping atoms closed under join;
- plurals and neat mass nouns (like furniture) and semelfactives (like jump) denote some *A with non-overlapping atoms closed under join.

Hungarian, in comparison, has the following kind of predicates:

- singular neat nouns (like bútor ‘furniture’, szék ‘chair’) and singular neat predicates (telic predicates like megérkezik ‘arrive’ and pure semelfactives like (fel)villan ‘flash.once’) denote some set of atoms A;
- mass nouns (like sár ‘mud’) and regular atelics (like fut ‘run’) are non-neat and denote some *A with overlapping atoms closed under join;
- plural nouns (like bútor-ok ‘furniture-PL’, szék-ek ‘chair-PL’) and mixed iteratives (like villog ‘flash.ITR’) are neat and denote some *A with non-overlapping atoms closed under join;
- pure iteratives (like kacsint-gat ‘blink-ITR’) are neat and denote C A for some set of non-overlapping atoms A and are thus closed under join and have overlapping atoms that are not available for natural language constructions.

Further parallels between the nominal and the verbal domains have also been presented here. For instance, neatness entails countness in Hungarian, but not English: i) there are no neat mass nouns in Hungarian, and ii) Hungarian neat verbal predicates are also “countable” insofar as their atoms can be counted when modified by numerals. It also appears that countness in both English and Hungarian requires overt marking of plurality. Count nouns in English and Hungarian have singular reference only, and plural marking (or, alternatively, a determiner or a numeral) is required for plural reference. In the verbal domain, semelfactives have singular reference in Hungarian, but not English, and correspondingly, an iterative interpretation of semelfactives necessitates a separate iterative marking in Hungarian, but not English.

However, counting of atoms is possible in the case of English semelfactives as well, and so counting in the nominal and verbal domains diverges somewhat. In addition, and more importantly, I argued that just as there are two plural operators in the Hungarian verbal domain.
(as opposed to one plural operator in the nominal domain), numerals have two interpretations in the verbal domain (as opposed to the single, atom-counting reading in the nominal domain): On one reading, atoms are counted provided they are non-overlapping, while on another, it is maximal eventualities that are counted. In the case of singular neat predicates, these two readings are equivalent, while regular activities and pure iteratives only allow the second reading. Of interest are mixed semelfactives/iteratives in Hungarian (and English), which allow both.

In conclusion, besides offering a semantic analysis of neatness, plurality, counting, and related features in the nominal and verbal domains of Hungarian (in juxtaposition to English), I aimed to show how extending a parallel between verbal and nominal domains in terms of countability-related features can be useful in uncovering and explaining various novel characteristics of verbal predicates. It should be emphasized, however, that no rigid cross-linguistic co-patterning of nouns and verbs with respect to features like neatness is predicted under this account, despite the close parallels uncovered in the case of Hungarian and English. Nonetheless, as a methodological approach, the perspective adopted in the present paper might prove useful in the study of verbal and nominal systems of other languages.

References


