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WORDS COUNT, BUT THOUGHTS SHIFT: A FRAME-BASED ACCOUNT TO CONCEPTUAL SHIFTS IN NOUN COUNTABILITY*

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The current paper proposes a frame-based account to conceptual shifts in the countability domain. We interpret shifts in noun countability as syntactically driven metonymy. Inserting a noun in an incongruent noun phrase, that is combining it with a determiner of the other countability class, gives rise to a re-interpretation of the noun referent. We assume lexical entries to be three-fold frame complexes connecting conceptual knowledge representations with language-specific form representations via a lemma level. Empirical data from a lexical decision experiment are presented, that support the assumption of such a lemma level connecting perceptual input of linguistic signs to conceptual knowledge.

Key words: *countability, mass/count distinction, conceptual shift, metonymy, frames, lexical decision, lemma.*

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1. Introduction

From a linguistic point of view, noun countability is first and foremost a syntactic phenomenon. Count nouns – as the name suggests – can be counted. They can be pluralized and combined with numerals and quantifiers like *many* and the indefinite article. Mass nouns on the other hand can not be counted, that is they do not pluralize, do not combine with numerals or the indefinite article and require the use of quantifiers like *much* instead of *many*. However, not only are there nouns that occur in both kinds of syntactic environments, so called dual life nouns [Pelletier 2012] like *cake* in example (1), but it is also possible to insert e.g. a typical mass noun in a count noun phrase (NP) under certain circumstances, such as in 2 a and b.

(1) a. They brought **three** entire **cakes** to the party.
→ count
b. I have eaten so **much cake**, I feel sick.
→ mass

(2) a. They serve **three waters** here.
→ interpreted as "sorts of water"
b. At the restaurant, I had **a water** and Julia had a wine.
→ interpreted as "a portion of water"
c. There is so **much apple** in the cake, it is really juicy.
→ interpreted as "many grinded apples"

The sentences in (2) represent examples of the two most common mass-to-count shifts observed: A sorter shift, as in (2a), and what has been termed packager shift in the literature (see e.g. [Wiese & Maling 2005]) as in (2b). Example (2c) is a case of a typical count noun combined with the mass determiner[1] *much* and represents a so-called grinder shift, most famously discussed in [Pelletier 1975].

As becomes apparent intuitively when reading the examples in (2) the meaning of the noun slightly changes when they occur in incongruent or atypical noun phrases. In (2a) and (2b) we conceive *water* to refer to an individual entity in the sense that we can clearly distinguish it from other referents of the same kind. This entity can be a sort of water, such as sparkling water that is clearly different from another sort such as still water in (2a). Or it can be a physical object as in (2b) – a glass filled with water – that is clearly atomic in that two separate glasses of water can not be combined to form one glass of water. (see [Rothstein 2010] for a discussion of the atomicity notion in relation to countability). Similarly, the noun *apple* in (2c) is not interpreted as one atomic

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[1] In order to not overcomplicate matters, we use the term "determiner" to refer to both articles and quantifiers for the scope of this paper.

apple but rather as the substance apples are made of. While Pelletier himself claimed that almost any noun could undergo this kind of shift [Pelletier 1975], there are clear differences between the frequencies of occurrence of incongruent usages that seem to suggest restrictions on the perceived well-formedness and interpretability of such NPs.

The first issue at hand when discussing countability shifts is of course: How is the countability of a noun represented in the mental lexicon? For decades, researchers of many disciplines have debated whether the count/mass distinction present in many natural languages might be rooted in pre-linguistic ontological knowledge, or inversely, whether syntax might provide the foundation for conceptual differentiations. Or put simpler, do we encode bounded entities by means of count nouns or do we interpret nouns exhibiting count syntax as bounded entities?

While there is substantial evidence against both of these claims in their strongest form ([Soja, Carey & Spelke 1991; Huntley-Fenner, Carey & Solimando 2002; Gatherole 1985; Gordon 1988]), many linguistic approaches include at least a correlation between the mental representation of a noun's referent and the noun's countability feature. In these theoretical approaches, the semantics of a noun (that is the mental representation of the noun's referent) can either be considered to reflect an object in the broadest sense or a substance in the broadest sense. This distinction has been employed in different lines of research using different terminology. For instance, it is described in Landman's Iceberg Semantics [Landman 2011; 2016], where it is illustrated in the notion of base disjointment. Similar notions include "boundedness" ([Jackendoff 1991]) and "atomicity" ([Rothstein 2012]).

But the assumption that the grammatical countability feature of a noun is determined directly by the physical properties of the entity it refers to experiences strong limitations. Next to the obvious problem of abstract nouns, one major argument against it is that nouns denoting one and the same entity differ in their countability status across and even within languages. Consider the nouns in examples (3) and (4)[1].

(3) Dutch translations of the noun *furniture*
a. *meubel(s) 'piece(s) of furniture'* (Count)
b. *meubilair 'furniture'* (Mass)

(4) Translations of the noun *lentils*
a. German: *Linse(n) 'lentil(s)'* (Count)
b. Czech: *čočka 'lentil'* (Mass)

[1] Examples originate from personal correspondence with Prof. dr. Hana Filip.

Example (4) shows the different linguistic signs used in German and Czech to refer to lentils. While German, similar to English, utilizes a count noun that exhibits all the grammatical behavior typical for count nouns outlined above, the Czech noun in (4b). is grammatically speaking a prototypical mass noun[2]. Despite this difference, we do not see any reasons to assume the mental representation of *lentils* to be different for Czech and German speakers.

Similarly, we assume that the mental representation of furniture does not differ drastically across Dutch speakers whether they refer to individual pieces of furniture or talk about the furniture of e.g. an entire house.

Taken together these observations do not suggest a one-to-one mapping of conceptual and grammatical properties. We therefore propose noun countability to be a grammatical feature that can but does not necessarily have to coincide with the real-world physical properties of the noun's referent or a language user's conceptual representation thereof.

Rather, in this paper we present an account of mental knowledge that separates the conceptual knowledge of entities and their properties from the knowledge of linguistic expressions and their properties in distinct yet interconnected representations.

Building on that, we propose a formalization of the mental processes underlying countability shifts that is in accordance with current psycholinguistic models of the mental lexicon and utilizes frames as the general representation of mental knowledge.

According to [Barsalou 1992] frames – understood as recursive attribute-value structures – provide the fundamental representation of knowledge in human cognition. Building on Barsalou, [Löbner 2014] formulates the hypothesis that the human cognitive system operates with a single general format of representations that is in essence frames and provides evidence for frame structures on all levels of linguistic representations. Frames are recursive attribute-value structures in which the attributes act as functions that assign values of different nature (motor-sensory, abstract, etc.) to the mental representations of entities. Human knowledge mainly consists of knowing to which entities attributes may apply, which values they may take and which constraints hold between the different attributes (see [Petersen 2007/2015] for details). Frames can be represented as graphs in which the arcs correspond to attributes.

[2] Note that there is in fact a plural form of *čočka (čočky)*, that however refers to lentils in the optical sense, i.e. multiple round shaped pieces of glass rather than the leguminous vegetable.

2. Word representation: A frame-based Account

Following [Levelt, Roelofs & Meyer 1999] and [Roelofs & Ferreira in press], we consider the mental representation of a noun to be an interconnected complex of three representations originating from three different domains: (i)a phonological word form level, including the sound pattern employed in language perception,(ii) a lemma level representing the grammatical information and combinatorial restrictions of the noun and (iii) a non-linguistic concept level that serves as the representation of meaning.[1] [2]

2.1 Count and mass nouns. We assume that syntactic countability (i.e. the information about the determiners a noun can be combined with to form a grammatical NP) is a property of the lemma, similar to other grammatical properties such as grammatical gender, which – in languages that exhibit gender as a morphological category – is determinative of the form a given determiner or adjective has to take in order to combine with a given noun. This combinatorial information is formalized here in the DETERMINER attribute in the lemma sub-frame of the lexical entry. Unlike grammatical gender, which only occasionally coincides with conceptual properties[1], the countability of the lemma may stand in a stronger relation to certain conceptual properties of the meaning representation. Here, we propose this property to be the presence or absence of the attribute SHAPE in the conceptual sub-frame. Shape is meant here in the broadest sense, that is the presence of any form of stable boundary (be it physical, temporal or otherwise) that allows for a conceptualization of an individual entity constitutes as shape. "The notion of shape in a similar context was mentioned in [Rijkhoff 2002], however he limited his analysis to nouns denoting concrete objects. Rijkhoff states that "The reason why mass nouns […]require the occurrence of a classifier is that the meaning definitions of these nouns do not include the notion of spatial boundedness or discreteness (Hundius & Kölver 1983). Since onlydiscrete entities (+Shape) can be numerated directly…" (p. 134). Crucially, in the present approach, the attribute SHAPE is not limited to special shape, but also includes more abstract forms of individuation." Consider the frames for the count noun *Apfel* (*apple*) and the mass noun *Wasser* (*water)* in Figure 1.

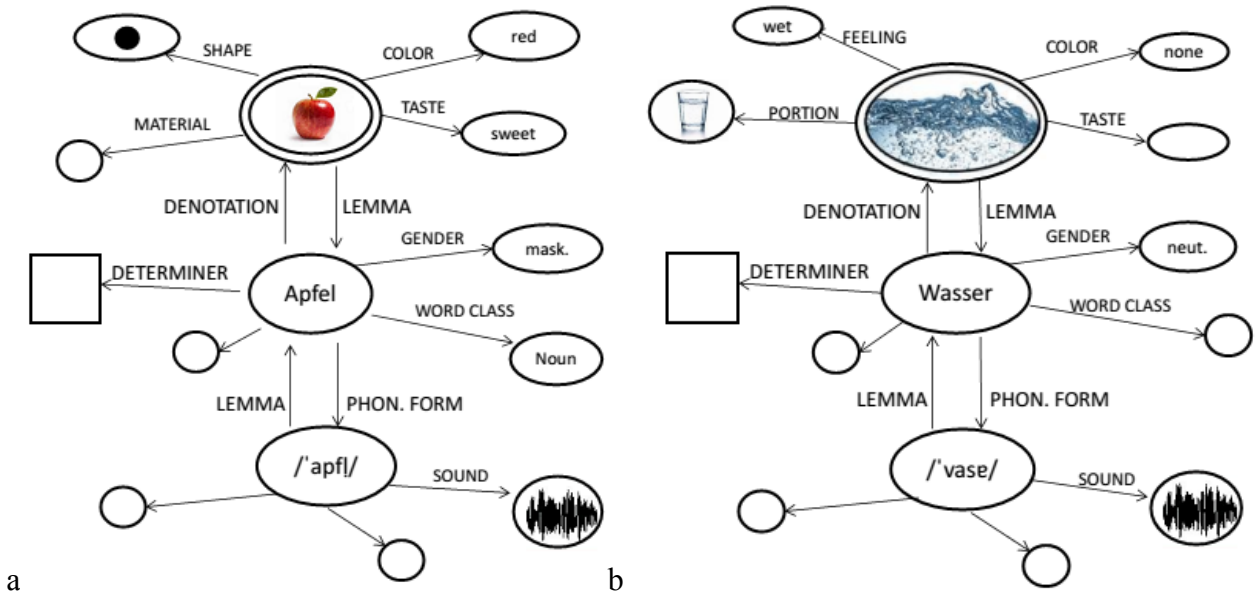

Figure 1. Simplified frame representations of lexical entry of German nouns[2]

[1] For example, grammatical gender sometimes coincides with natural sex in some cases of animate entities Other noun classes include the words for eg. most but not all vehicles.

[2] Note that all frame graphs in this paper are simplified for illustrative purposes and follow the following conventions: Double circled nodes represent central nodes that depict the concept referred to by the linguistic expression. Pictures on the meaning level represent the non-linguistic nature of concepts. Square nodes represent empty value slots. English is used as meta-language.

The conceptual representation of *Apfel* includes the attribute SHAPE with its value (round) whereas the concept of *Wasser* does not include a shape attribute as the noun *Wasser* typically refers to a non-bounded entity. The attribute DETERMINER on the lemma level has an empty value slot. This is because this node combines with the central node of a determiner lemma when a noun phrase is formed.

2.2 Noun phrases. Phrase-formation is formalized in the frame account as the unification of two nodes. If we assume Figure 2a to be the (simplified) lexical entry of *ein* (indefinite determiner) it becomes clear how a simple NP such as *ein Apfel* '*an apple*' can be formed by unifying the DETERMINER value slot of the *Apfel*-Lemma with the central node of the *ein*-Lemma to form a bijectional node pair in which *ein* is the value of DETERMINER and *Apfel* is the value of ARGUMENT (see Figure 3).

Note at this point that on the conceptual level of the *ein*-frame the ARGUMENT value slot carries the attribute SHAPE. That is, a restriction is placed on the possible nodes that can be unified with this slot, namely only nodes with a shape attribute. Thus, next to the distributional information on the lemma level that encodes which (class of) determiners are most frequently combined with a given noun, a semantic restriction is present that encodes the tendency to interpret nouns combined with *ein* as bounded entities.

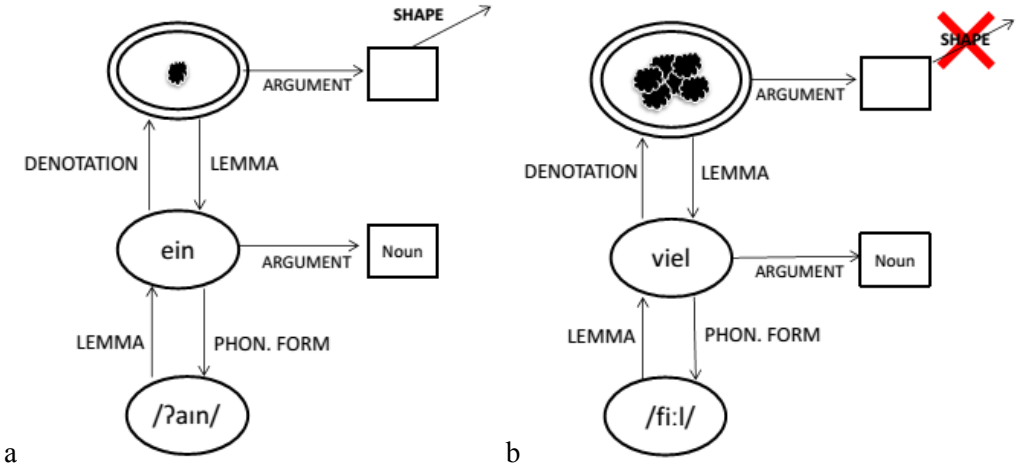

Figure 2. Mental representation of the German indefinite determiner ein'a' and the mass determiner viel 'much'

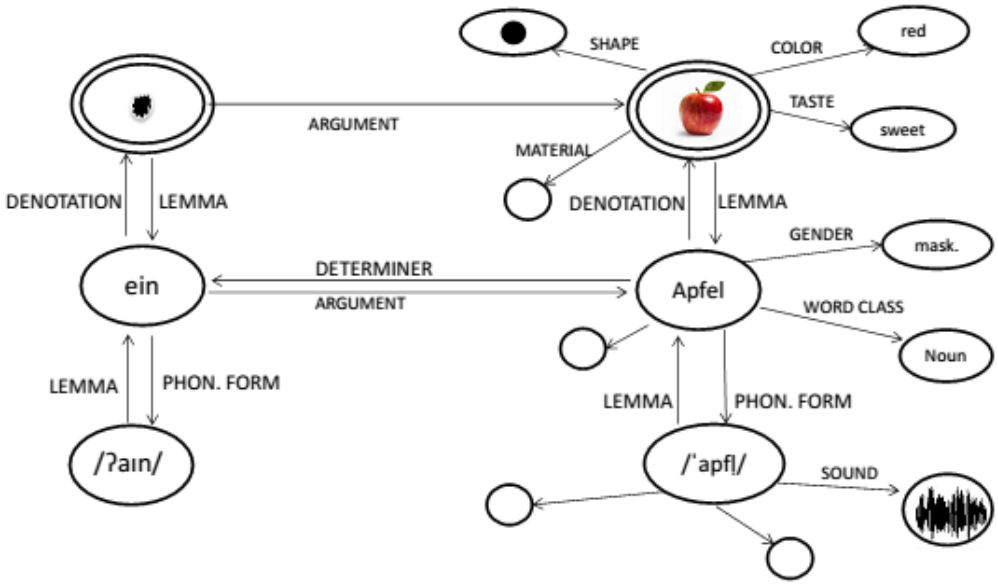

Figure 3. Mental representation of German noun phrase ein Apfel 'an apple'

2.3 *Dual-life Nouns:* The term dual-life nouns or dual nouns refers to a class of nouns that occur in both count and mass-specific syntactic environments. Much discussion about this phenomenon and the questions it gives rise to can be found in the literature on countability (see for instance [Kiss et al 2017] and articles cited therein) . Whether the two noun senses originate in the same lexical entry or whether we are actually dealing with two distinct but homophone words, is still debated. Our present account favors the later view, but provides a solution to the problem of concept similarity by means of the separation of concept and lemma. Consider our dual noun example from above: *cake*. As with all other conceptual representations of noun referents, the word meaning consists of a vast network of information including a node representing the bounded entity "a cake" as well as a node representing the substance "cake". If we assume that the link from the lemma to the concept's central node (and therefore the status of being the value of DENOTATION) is determined by the frequency with which the noun refers to this particular notion of the conceptual network then we can conceive that a dual noun refers to the bounded notion as well as to the non-bounded notion of the concept. But the two nodes in the concept sub-frame can not be linked to the same lemma, since in the lemma, the grammatical property of which determiner is needed to combine with the noun is represented. The bounded object-like node has to be linked to a lemma that combines with count-specific determiners whereas the substance-like node has to be linked to a lemma that combines with mass-specific determiners. We assume this specification to be the only difference between the two "cake" lemmata; all other information regarding, e.g. word class, gender, etc., are identical. At the phonological level, however, there is absolutely no difference between "cake.bounded" and "cake.substance". Therefore, only one phonological form linked to both lemmata is assumed.

Interestingly, according to [Jescheniak et al. 2003] all homophones could be captured in the mental lexicon by a shared phonological form that is attached to separate lemmata. Of course, in cases of homophones that refer to entities of very different kinds, e.g. *tale* and *tail*, the two lemmata would be connected to two separate concepts rather than two individual nodes inside one and the same concept frame.

3. Countability Shifts: Grinding and Packaging

3.1 The Grinder Shift: The sentence in (2c) exemplifies a grinder shift. Mass determiners like *much* or *viel* in German are assumed to have a restriction on the conceptual level that limits the range of possible ARGUMENT values to concepts that do not have a shape attribute. In order to comprehend an NP like *much apple* in (2c), a re-interpretation needs to take place that shifts the word meaning of the noun from an atomic, bounded entity towards a non-bounded entity, in this case: a substance. Assuming that the conceptual representation of *apple* includes everything we know about apples, it also includes an attribute MATERIAL which takes "apple substance" as its value. Inspired by the frame analysis of metonymy ([Schulzek 2014]), we propose that a conceptual shift is accomplished by re-mapping the lemma of the noun to another node in the conceptual sub-frame, making this node the new central node and thus the value of DENOTATION. That is, when interpreting the NP in (2c), the noun reference shifts along an attribute chain (MATERIAL) towards a node that meets the conceptual requirements of the determiner (its value: apple-substance).

3.2 The Packager Shift: When a mass noun occurs in a count environment the conceptual shift parallels the one described above. For non-bounded entities such as water, we can assume a PORTION attribute to be part of the conceptual representation that takes (in case of liquids at least) a filled container as its value. For non-liquids such as aggregates one might consider a notion along the lines of pile or heap, or a container such as bowl or sack. Even many of the more abstract mass nouns also refer to entities that can be portioned. Consider next to the sorter shifts in (5a) and (5b), the sentence in (5c) where the noun *vacation* clearly refers to a temporally bounded event.

(5) a. Decorating the tree and singing carols are **two** beloved Christmas **traditions** of my family.
b. More than **six** different **religions** are repre sented by the population.
c. I took **a vacation** in spring and another one in winter.

We analyze packager shifts as shifting the central node from the conceptual representation of a non-bounded referent along the PORTION attribute to its value, which being a bounded entity possesses a shape attribute. That way the restriction imposed by the determiner is met and the NP is comprehensible. The result of the process is depicted in Figure 4.

3.2.1 Unpackageable mass nouns. A much discussed problem of semantic accounts on countability that employ a restriction to syntactic behavior in terms of conceptual properties is the case of so-called object mass nouns. Object mass nouns refer to collec-

tions of things, either heterogeneous (*baggage, furniture, jewelry*) or homogeneous (*sand, rice*). Clearly, a conceptual representation of these entities has to include a node that possesses a shape attribute, namely the individual objects the collection is composed of. However, those mass nouns cannot be shifted in the sense that the same word can be used to refer both to the whole collection and to one piece (i.e. a single item). Therefore, when used with a count-determiner, the noun usually gets interpreted –if at all– as "a kind of X" or "a portion of X" rather than "one unit of X" [Sutton & Filip 2016].

(6) a. #**Einen Schmuck** habe ich noch nicht verkauft.
→one piece[1]
One jewelry I did not sell yet.
b. #Da sind nur noch **drei Reis** in der Packung.
→ three grains
There are only three rice left in the package.

Crucially though, the sentences in (6) show a different kind of "portioning" than in the classic packager shift described above. While *rice* refers to a collection of individual grains of rice, *water* does not refer to a collection in the sense that water is made of many glasses of water. A unit of water one might want to consider that parallels *grains of rice* as in (6b) could be drops or molecules, yet the respective NPs given in (7) seem much less felicitous than the classic packager shifts in (2b) and (3c).

(7) a. #The scientist isolated **a water** to observe it under the microscope.
→ a molecule
b. #**One water** spilled on her shirt ruined her entire classy appearance.
→ a drop

Thus, for classic substance-denoting mass nouns as well as object mass nouns, the packager shift can make a noun refer to a portion but not to a unit. Clearly, a UNIT-attribute value would have to have a SHAPE attribute, however, since the shift would involve re-referencing the lemma to the value of the UNIT attribute in one case and to the value of the PORTION attribute in the other case, the formalization presented here can capture this difference.

Another reason for the discrepancy in possible target nodes for the shift might lie in the fact that the value of the UNIT attribute is often already connected to a different lemma, which could block the shift of the lemma from the first (collection denoting) node towards that UNIT value node (see Figure 5). Of course, in the case of heterogeneous collections, like jewelry, the value of the UNIT attribute is only specified in a specific situation. Without context, there are many possibilities as to what could be "one piece of jewelry" (a ring, necklace, earring, etc.). However, even in the case of an underspecified value, the lemma *Schmuckstück* '*piece of jewelry*', would be attached to that node, not the lemma *Schmuck* itself.

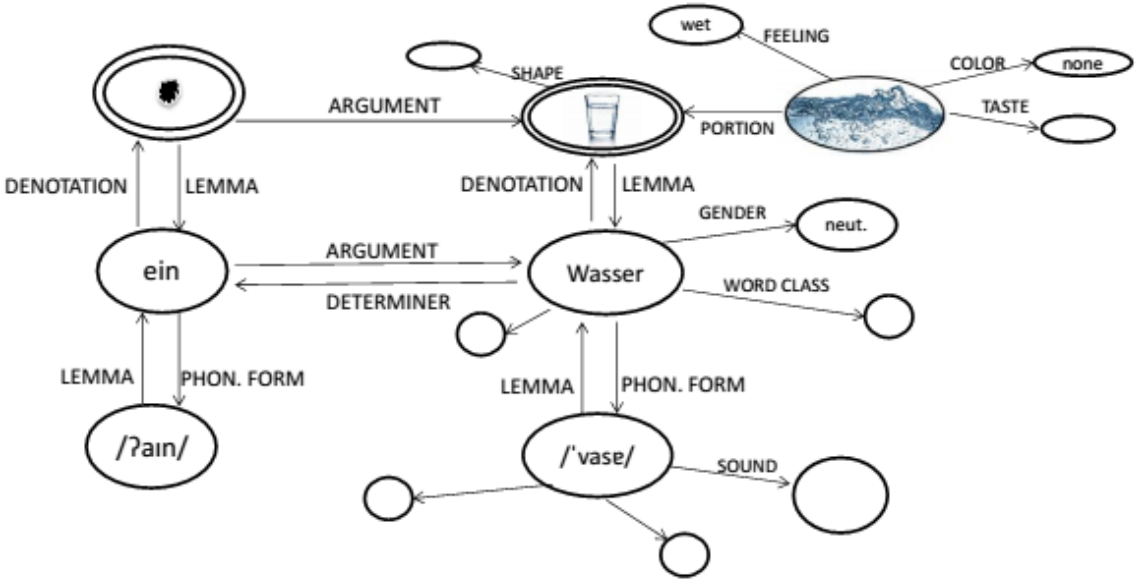

Figure 4. Mental representation of NP "ein Wasser" after packager shift

[1] The symbol # marks that the sentence can not be interpreted in the depicted sense.

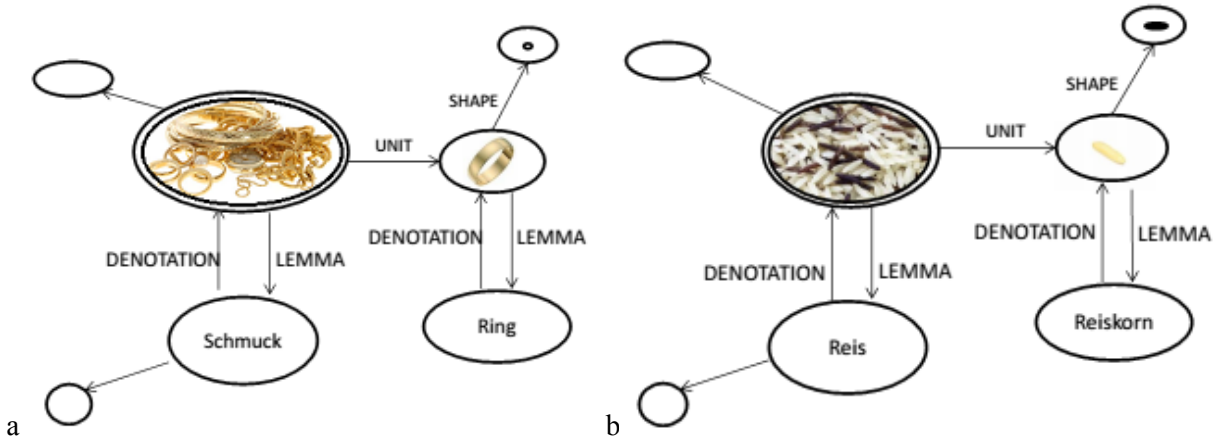

Figure 5. Simplified concept and lemma sub-frames of Schmuck 'jewelry' and Reis 'rice'

To sum up, the presented account gives rise to four clear predictions that can be empirically tested. (i) Noun countability is a grammatical property encoded in the lemma that is determined by the determiners a given noun can be combined with. (ii) When a determiner is encountered in language perception an expectation is formed about the countability status of the following noun. (iii) The lexical entry of a dual noun includes two lemmata, one of each countability class, and therefore meets the expectations arising from any determiner. (iv) In cases where the expectation caused by the determiner is not met, an attempt can be made to shift the reference of the noun (i.e. the concept-lemma link) towards a node in the conceptual representation that meets the expectation about the possession of SHAPE.

In the next section, we present data from an empirical psycholinguistic investigation of countability shifts that included factors relevant to test the predictions made by our account.

4. Empirical Evidence

[Beckmann & Indefrey in prep.] conducted a lexical decision experiment, where participants (n=52) were auditorily presented with nouns that were preceded by either a congruent or an incongruent determiner[1]. In other trials the noun was replaced by a pseudoword, that is a word that follows the phonotactic rules of German, but is not an existing German word. The participant's task was to indicate whether the presented noun is a real German word or not by means of a button press.

4.1 Study design. The noun stimuli were chosen based on findings of a corpus study that tested co-occurrence of a given noun with four count-specific determiners and four mass-specific determiners in a collection of German newspaper articles. As result, a noun was classified as a count noun if it never occurred with one of the mass-specific determiners and as a mass noun if it never occurred with one of the count-specific determiners. Nouns occurring with determiners of both classes to a representative extend (at least 20 %) were characterized as dual nouns. Depending on the respective distributions, dual nouns were classified as dual_count (more than 50 % occurrence with count determiners) or dual_mass (more than 50 % occurrence with mass determiners).

Furthermore, the stimuli were pretested in a sentence-production study where participants were asked to form sentences with incongruent NPs. Subsequently these sentences were classified by shift type (e.g. packager vs. sorter shift for mass nouns). According to those results, the pure count and mass noun stimuli were further classified as shiftable if many of the formed sentences successfully employed the respective shift[2], and as not shiftable if participants refused to form a sentence with the incongruent NP or mainly used a different shift type.

Thus, in the lexical decision experiment there were two factors that are of interest in this discussion. The first is congruency (congruent, incongruent) where the congruent condition showed *viel 'much'* (mass-specific determiner) with mass and dual_mass nouns and *ein 'a'* (count-specific determiner) with count and dual_count nouns. The incongruent condition showed *ein 'a'* with mass and dual_mass nouns and *viel 'much'* with count and dual_count nouns.

[1] The experiment included another condition, neutral, where the noun was preceded by brown noise, and several other independent variables. Please contact the authors under n.beckmann@phil.hhu.de for more detailed information.

[2] „Respective shift" here refers to Grinder shift for count nouns and packager shift for mass nouns.

This factor therefore constitutes a measurement of familiarity or frequency of encounter of a given noun in the respective syntactic environment. The second factor of interest is the shiftability (shiftable, not shiftable) of the pure count and mass nouns. That is the noun was either often used with the respective shift in the sentences production study (shiftable) or not often used with the respective shift in the sentences production study (not shiftable). We assume this factor to constitute a measurement of how easily a given incongruent NP is interpretable.

4.2 Results. Figure 6 shows the differences in reaction time between the congruent and the incongruent condition for all countability classes. As can be seen, the difference between congruent and incongruent NPs is greater for pure count and mass nouns than for the two classes of dual nouns. Statistical analysis revealed that the congruency effect only reached significance for those pure nouns, but not for the dual nouns.

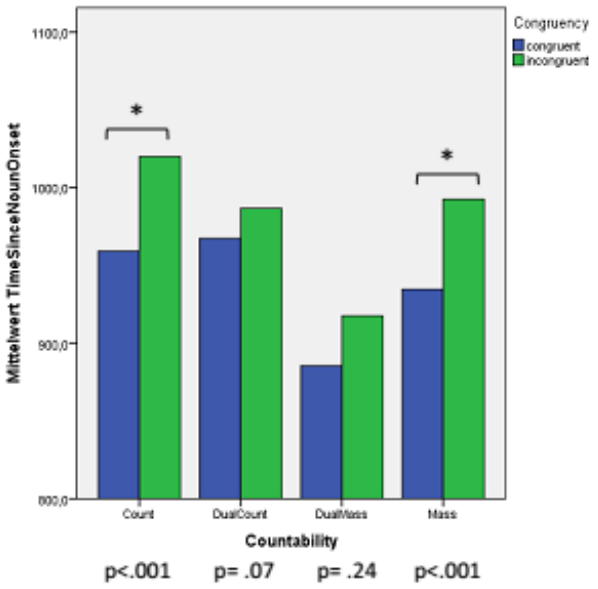

Figure 6. Congruency effect per Countability class.
Note: Y-axis: Mean reaction time from noun onset in milliseconds.

This outcome meets the predictions made by our account. We predict that an incongruent determiner preceding a pure count or mass noun gives rise to an expectation regarding the countability of the upcoming noun that is not met. If a count-specific determiner is encountered, one expects a count noun to follow. If instead this determiner is followed by a mass noun it takes longer to recognize that noun as a German word because of the mismatch between expectation and actual input.

Differences in reaction time with respect to the second factor of interest Shiftability are depicted in Figure 5. Again, the effect of congruency is observable (reaction times for incongruent NPs are longer than reaction times for congruent NPs). Further, the figure shows that there is hardly any difference between shiftable and non-shiftable nouns. Statistical analysis showed no significant difference between shiftable and non-shiftable nouns in either congruency condition.

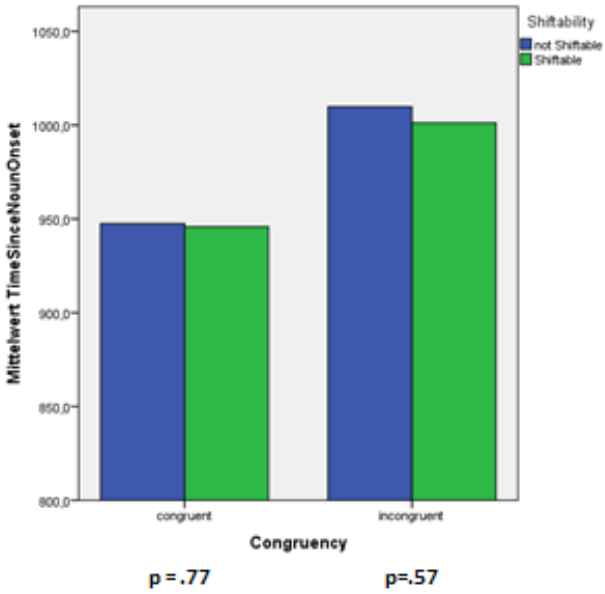

Figure 7. No significant difference between shiftable and not shiftable nouns
Note: Y-axis: Mean reaction time from noun onset in milliseconds

Thus, whether an incongruent NP could be reinterpreted by means of a grinder or packager shift or not does not influence the time it takes to recognize the noun as an existing German word.

This outcome shows that the speed of lexical access of a noun is influenced by the frequency of encounter of a given determiner-noun combination (congruency) rather than by the interpretability of an incongruent NP (shiftability).

4.3 Discussion. We see the results as evidence for our account in that the countability status of a noun is a property of the lemma. The employed task tests the time needed for searching one's mental lexicon for an existing entry. Lexical access – seen from the perspective of the present account on lexical en-

tries – mainly targets the lemma level. What a noun refers to is of little relevance for determining whether the presented sound is indeed an existing word in the participant's language or not.

This explains why an effect of congruency, but not one of shiftability could be found. Congruency is a property that depends on the combinatorial information encoded in the lemma. Shiftability on the other hand is a conceptual property, namely whether or not the given concept includes a node with the relevant attributes for the lemma to shift to.

According to our account, encountering a determiner gives rise to an expectation about the countability status of the upcoming noun, which facilitates lexical access of that noun if the expectation is met. In cases where that expectation is not met, i.e. with incongruent NPs, there is no facilitation and the time needed to recognize the word is longer. It is not clear whether the longer recognition time is due to not pre-activated features or due to wrongly activated incongruent features (see [Naumann & Petersen 2007] for a discussion on pre-activated features in frames). In any case, whether the successfully found lemma could be shifted to another node in the concept in order to form an interpretable determiner-argument relation or not did not influence the speed of lexical access.

The lexical decision data presented in Figure 6 also support the idea stated as the third prediction in section 2.3. For dual nouns, no significant effect of congruency could be found. We interpret these results as a lack of determiner-induced priming, or lack of violated expectation in the incongruent case. That is, if a determiner causes an expectation about the combinatorial specifications encoded in the lemma of the upcoming noun and the lexical entry of the dual noun presents two lemmata, one of which matches the expectation and leads to the appropriate concept then the expectation – whatever it may be – is always met.

It is possible that nouns become dual nouns due to very frequent shifting. For example, if we have a mass noun, such as *Bier 'beer'* that undergoes a packager shift very often because people talk about beer portions a lot, it is conceivable that a second lemma is added to the lexical entry in order to economize (and therefore almost eliminate) the effort it takes to re-interpret the noun reference in such an NP. The resulting lexical entry is approximated in Figure 6.

Note that contrary to homophones that do not refer to conceptually similar entities, here the two lemmata are meant to link to two nodes of the same conceptual network. As explained in section 1, the concept consists of all knowledge about the entity: what it is made of, how it looks, feels, tastes, smells, how it is used, etc. Thus the knowledge of beer being a beverage typically served in glasses is represented as part of the beer concept. In cases of conceptually non-related homophones, *tale* and *tail* for instance, one word form would link to two different lemmata which in turn would link to (central nodes in) two different concepts.

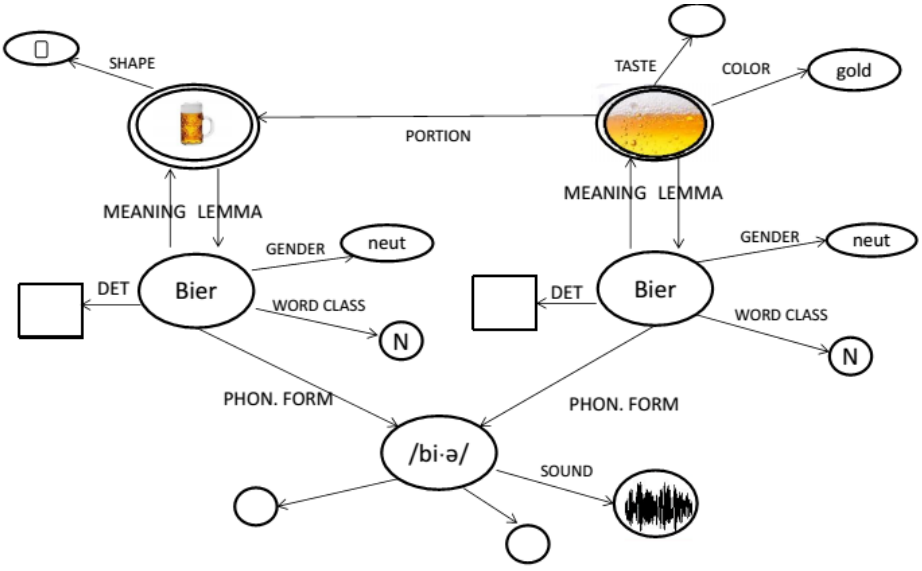

Figure 8. Simplified Lexical Entry of German Dual Noun Bier 'beer'

5. Conclusion

In sum, the first three predictions that follow from the current formalization are supported by the presented data. Prediction (ii) states that encountering a countability-specific determiner gives rise to an expectation about the countability encoded in the lemma of the noun. For pure count and mass nouns, that expectation can either be met or not, and this match or mismatch is observable in empirical investigations that target the access of lemmata. Here, we found a significant congruency effect reflecting precisely that difference. For dual nouns however, no such congruency effect could be observed, thus supporting the third prediction (iii): the claim that dual nouns are in fact two homophone lemmata sharing a phonological word form. No significant effect of shiftability was found thus supporting prediction (i) which states that countability is encoded in the lemma and not solely determined by conceptual properties. Prediction (iv) is supported not by the data from the lexical decision experiment but by the observational examples in section 2. That is, incongruent NPs can be interpreted under certain circumstances, namely if the lemma can be re-attached to a fitting node inside the same concept frame.

To conclude, in this paper we propose an analysis of countability shifts that combines well-tested properties of widely accepted models of the mental lexicon, as the lemma level, with the advantageous strengths of frame formalization, such as recursiveness and a very promising account on metonymy.

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СЛОВА СЧИТАЮТ, А МЫСЛИ СДВИГАЮТ: ОБЪЯСНЕНИЕ КОНЦЕПТУАЛЬНЫХ СДВИГОВ В ИСЧИСЛЯЕМОСТИ СУЩЕСТВИТЕЛЬНЫХ В РАМКАХ ТЕОРИИ ФРЕЙМОВ*[1]

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Данная статья предлагает использование теории фреймов для анализа концептуальных сдвигов в области исчисляемости существительных. Мы рассматриваем сдвиги в исчисляемости существительных как синтаксически обусловленную метонимию. Употребление существительного в инкогруэнтной именной группе, т.е. комбинирование этого существительного с детерминативом другого типа исчисляемости, инициирует реинтерпретацию референта данного существительного. Мы выдвигаем гипотезу, что единица ментального лексикона представляет собой трехуровневый комплекс, который соединяет репрезентации концептуального знания со специфическими языковыми формами через уровень леммы. В статье представлены результаты эксперимента на принятие лексического решения, которые поддерживают гипотезу, что уровень леммы в вышеуказанном комплексе соединяет восприятие лингвистических символов с концептуальным знанием.

Ключевые слова: *исчисляемость, разделение существительных на исчисляемые/неисчисляемые, концептуальные сдвиги, метонимия, теория фреймов, принятие лексического решения, лемма.*

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