

Repairs

The Added Value of Being Wrong

Edited by
Patrick Brandt and Eric Fuß

DE GRUYTER
MOUTON

ISBN 978-1-61451-080-2
e-ISBN 978-1-61451-079-6
ISSN 1861-4167

Library of Congress Cataloging-in-Publication Data

A CIP catalog record for this book has been applied for at the Library of Congress.

Bibliografische Information der Deutschen Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.dnb.de>.

© 2013 Walter de Gruyter, Inc., Boston/Berlin
Cover image: iStockphoto/Thinkstock
Typesetting: PTP-Berlin Protago-TEX-Production GmbH, Berlin
Printing: Hubert & Co. GmbH & Co. KG, Göttingen
☺ Printed on acid-free paper
Printed in Germany

www.degruyter.com

Holden Härtl

Generic rescue: argument alternations and the monotonicity condition*

Abstract: Generic interpretations as in *The tiger kills to survive* have often been observed to reconstitute the linguistic acceptability of certain verb argument structure modifications. But can the right context rescue everything? This paper investigates the impact a generic interpretation can have on three types of argument alternations: (i) the intransitive use of inherently telic verbs like *to kill*, (ii) the intransitive use of stative verbs like *to love*, and (iii) middle alternations like *it reads easily*. It will be shown that a generic licensing of these alternations critically depends on whether or not a *property reading* and a corresponding *contrast relation* can be established in the interpretation. A generic environment cannot license all verb alternations, though. Crucially, I shall follow proposals which hypothesize a *monotonicity condition* to be functional in the lexical system, stating that no truth-conditionally relevant material may be deleted in an alternation. The results will be interpreted against the ongoing debate about the demarcation between the grammatical and the pragmatic layers of language, and I shall argue for an implementation of strict lexical principles to be obeyed in every contextual environment, which are not available to otherwise powerful pragmatic adjustment operations.

1 Introduction

Theories of lexical semantics that strive to predict the argument structural behavior of predicates are challenged by cases in which certain lexical semantic features can be adjusted to contextual and pragmatic conditions of some type, while others cannot. For example, there are numerous transitive verbs whose intransitive use is strongly marked:

- (1) a. * *The plumber installed this morning.*¹
- b. * *Yesterday, the tailor attached.*
- c. * *Max added.*

As is well known, however, argument structure reductions of this type recover significantly under a generic interpretation. This “genericity effect”, which I consider

to be of pragmatic provenance, can be observed with both predicate and nominal genericity, cf. Chierchia (1995); Krifka et al. (1995) among many others for the theoretical details, and with a variety of verb complexes. Consider the following examples and note the contrast between the generic and the non-generic variants:

- (2) a. * *The tiger killed today.*
 a.' *The tiger kills to survive.*
 b. * *The exotic dancer became naked after midnight.*
 b.' *Humans became naked to keep cool.*
 c. * *This ship was sunk to become a hero.*
 c.' *Three ships have to be sunk to become a hero.*

The generic expression in (2a') involves a suppression of the internal argument of a causative achievement verb – a verb type which typically disallows an intransitive use; see (2a). Likewise, adjectives like *naked* in their default interpretation cannot function as the predicative of the copula *become*. This, however, improves again under a certain property reading, as the example in (2b') shows. Somehow related to this is the control construction in (2c), again containing the copula *become*, where the PRO-subject of the embedded clause appears to be properly controlled in generic environments only; see (2c'). Similar effects can be observed in German. For instance, the following example of a middle construction involves the verb *kaufen* ('to buy'), which typically cannot enter a middle alternation, cf. (3a). The situation is again better to a noticeable extent in a context strongly promoting a generic interpretation – a characteristic which is central in middles, see (3a'):

- (3) a. * *Diese Schuhe kaufen sich gut.*
 'These shoes buy well.'
 a.' *Manolo-Blahnik-Schuhe kaufen sich bei Harrods einfach besser als bei Ebay.*
 'Manolo Blahnik shoes buy better at Harrods than on Ebay.'

It seems as if in all the acceptable cases above a generic interpretation can adjust certain argument structural features and thus repair lexical representations which would otherwise be uninterpretable. But can generic readings remedy any otherwise unacceptable realization? Certainly not: Constructions like in (4) are unacceptable under any contextual embedding, be it episodic or generic or any other type of pragmatically suggesting environment:

- (4) a. * *Dolly Parton does not resemble easily.*
 a.' * *Country stars do not resemble easily.*
 b. * *This kid teaches with difficulty only.*
 b.' * *Kids from problem families teach with difficulty only.*
 c. *The quiz candidate knew *(all the answers) in the show.*
 c.' *Students from Bavaria always know *(the answers) in the exam.*

Verbs like *to resemble* or *to teach*, for reasons I shall explore below, are acceptable as middles neither in an episodic nor in a generic context. Similarly, an epistemic verb like *to know* cannot be realized intransitively, again regardless of its contextual environment. For the lexical semanticist, the contrast between the cases in (2) and (3) on the one hand and (4) on the other raises the question as to which types of lexical structure can be successfully attuned to certain pragmatic requirements and which cannot. Can contextual adjustment, or pragmatics in general, coerce lexical structures into any interpretation intended, or are there strict rules that prevent a specific subset of lexical components from being modified? In what respect are the lexical properties of a verb like *to buy* better predisposed to a middle than those of a verb like *to teach*? Why exactly is an intransitive use fine with verbs like *to kill* in a generic context but disallowed with verbs like *to know*?

In the current paper I shall address these questions from the perspective of the interface between lexical and conceptual semantic structure building. In particular, I shall look at the explanatory profit we gain from implementing a *monotonicity condition*, as it has been discussed in recent literature, e.g., Koontz-Garboden (2007), to predict argument-structural options verbs can adopt. I shall formulate a corresponding hypothesis, which articulates that verb alternations are licensed under a generic reading only if the alternation is carried out in a *monotonic* fashion, where no truth-conditionally relevant lexical material may be deleted from the representation. To verify this hypothesis, three types of argument structure modifications and the corresponding licensing conditions will be examined: (i) the suppression of the internal argument of inherently telic verbs like *to kill*, (ii) the blocked intransitive use of stative verbs like *to know*, and (iii) the middle alternation of the type *it reads easily*. For all three domains the above hypothesis will be confirmed, leading us to the conclusion that the lexical semantic system contains a specific subset of “hard” constraints, which are grammatically fixed and can thus not be deactivated under any type of contextual and pragmatic configuration.

2 The monotonicity condition and a hypothesis for verb alternations

The monotonicity condition, as it is used in grammatical theorizing in its most global sense, states that structural information can only be added but not deleted or changed; see, e.g., Bresnan (1990); Kiparsky (1982). Accordingly, morpho-syntactic and lexical operations can only act in a monotonic fashion so that the expression produced contains all meaning components of the sub-parts of this expression; cf. Dowty (2007); Shieber (1988). There are several versions on the market and I shall concentrate on a specific dialectal variant formulated from a lexical viewpoint; cf. Koontz-Garboden (2007), (2009):

(5) *Monotonicity condition*

Grammatical operations do not remove truth-conditionally relevant material from lexical semantic representations.

Of course, the adequacy of this condition will either sink or swim with the definition of “truth-conditionally relevant material”. In a technical sense, semantic material of this type should be logically entailed in the expression. But how can we decide whether some material has been *removed* from a lexical semantic representation (LSR) or whether it is simply not existent in this representation right from the beginning? In order to gain a clearer picture about the nature of the condition and its theoretical implications, let us have a brief look at two test cases that have been discussed in the literature in this context.

2.1 Anticausatives

Anticausatives are semantically reduced verb forms and thus represent a useful case for testing the explanatory potency of the monotonicity condition. There is a debate in the literature whether anticausatives as given in (6), i.e., unaccusative verbs with a causative variant, and even unaccusatives in general, contain a causative component in their lexical representation or not.

- (6) a. *The thin glass broke under the pressure.*
 b. *The Spanish ship sank in four minutes.*
 c. *Apples rot more slowly than pears.*

In English and many other languages the alternation between the anticausative and the corresponding causative verb form (e.g., *The pirates sank the Spanish ship*) is not morphologically reflected, whereas this is the case in languages like Russian or Spanish. A conventional perspective to anticausatives is that they do not denote a causative meaning in their grammatical representation; cf. Dowty (1979); Härtl (2003); Pesetsky (1995); Piñón (2001a), (2001b). As regards evidence from German, Härtl (2003) discusses dative NPs and their ability to be interpreted as (unintentional) causers in the context of anticausatives; see (7a). In contrast, a causal reading of the dative NP is not possible with the corresponding passive counterparts as is illustrated in (7b):

- (7) a. *Das dünne Glas zerbrach dem Mechaniker.*
 the thin glass broke [_{NP-DAT} the mechanic]
 ‘The thin glass broke on the mechanic [i.e., through the mechanic’s carelessness].’
- b. *Das dünne Glas wurde dem Mechaniker zerbrochen.*
 the thin glass was [_{NP-DAT} the mechanic] broken
 ‘The thin glass was broken on the mechanic [i.e., through someone else’s carelessness].’

The explanation for this difference in meaning implies that anticausatives are truly non-causative in German and, therefore, can license a supplement of a cause in the form of a dative causer. This option is not available with the (uncontroversial) causative passive counterpart because here two causal specifications for only one effect would collide, which is why the interpretation of the dative NP in (7b) switches to a non-causal, malefactive interpretation.

As an alternative explanation for the data in (7), we could also assume that anticausatives lexically encode an implicit cause and the dative NP somehow attaches to this causal component and makes it explicit. This perspective is compatible with the “reflexive” view on anticausatives as it has been proposed by scholars like Chierchia (2004); Koontz-Garboden (2009), and Levin and Rappaport Hovav (1995); cf. also Alexiadou, Anagnostopoulou, and Schäfer (2006). According to this view, anticausatives denote causativity implicitly as is shown in the following lexical representation:

- (8) *to break*_{ANTICAUSATIVE}
 $\lambda y \exists x \exists e [\text{CAUSE}(e, x, \text{BECOME}(\text{STATE}(y)))]$

Proponents of this causative analysis often draw on evidence stemming from certain modifications that can occur in the context of anticausatives. Similar to the passive *by*-phrase, for example, prepositional modifiers like *in to break under the pressure* or *to die from poisoning* are considered to signify an implicit cause present in the lexical representation of anticausatives. Similarly, *by itself* in the context of anticausatives has been characterized as an instantiation of the causal component, which, in this case, is bound reflexively, i.e., the theme argument *y* is identified with the causer *x*; see Chierchia (2004); Levin and Rappaport Hovav (1995).

According to Koontz-Garboden (2009), only a causative analysis of anticausatives can harmonize with the monotonicity condition, because, then, CAUSE need not be deleted from the lexical representation of the causative to derive the anticausative. I see two inconsistencies with this assumption. First, “causal” modifiers of the above type can occur with clearly non-causative verbs also. Consider the following examples from English and German, involving stative as well as activity verbs:

- (9) a. *Mary felt much better from the tablet.*
 b. *The baby will sleep better from being awake during the day.*
 c. *Das Wasser fließt nur unter starkem Druck.*
 ‘The water flows only under strong pressure.’

This suggests, on the assumption that verbs like *to feel*, *to sleep*, *to flow* do not contain a CAUSE by definition, that “causal” modifiers cannot be used to attest the presence of a causal component in the lexical representation in question; see also the discussion in Levin (2009).² Second, whether or not the alternation is consistent with the monotonicity condition critically hinges on what direction we assume for the alternation. At least in languages that do not mark the alternation morphologically, from a synchronic perspective, there is not much reason to assume that the anticausative is the variant *derived* from the causative by some lexical reduction operation; cf. Ramchand (2008) for further discussion. So, if we assume the unaccusative variant to be basic in German or English and the causative variant the lexically “enriched” one, a non-causative analysis for anticausatives by no means violates the monotonicity condition.³

The test case shows that, for now, the explanatory potency of the monotonicity condition is still questionable. Thus, let us have a look at another argument-structural domain as it is related to the reduction of an internal argument position. The discussion builds on Rappaport Hovav and Levin (1998), who employ the monotonicity condition in order to predict the argument-structural behavior

of verbs when it comes to reductions or extension of their subcategorization frame.

2.2 Argument realizations

Rappaport Hovav and Levin (1998: 113) introduce an *Argument Realization Condition*, which states that all sub-events in an LSR must be identified by an argument XP in the syntax. This requirement blocks the intransitive use of causative achievement verbs; see (10):

- (10) *Tracy broke *(the dishes).*
 [[x ACT] CAUSE [BECOME [y <STATE>]]]⁴

The explanation implies that the internal argument *y* of *break*-verbs is event-structurally relevant because it is associated with the second sub-event, i.e., the resultant state, and is thus expressed obligatorily. According to this reasoning, activity verbs like *to sweep* contrast with *break*-verbs in so far as they lexically encode only one event component, i.e., the activity:

- (11) *Tracy swept (the floor).*
 [x ACT<MANNER>]

In *sweep*-verbs, the external argument identifies the activity component and the second argument is associated with the information idiosyncratic to *sweep*-verbs, which is why the internal argument can be omitted. This behavior is consistent with the monotonicity condition on verb argument structure: Verb meaning is built up in a monotonic fashion, i.e., in a way which prevents primitive elements from being eliminated; see Rappaport Hovav and Levin (1998: 103). Consequently, we can observe systematic, monotonically increasing extensions of verb argument structure, which are associated with expansions of their event-structural meaning. For example, a verb like *to sweep* can be used intransitively, transitively, and with a resultative phrase as an instance of an accomplishment reading:

- (12) a. *Tracy swept.*
 b. *Tracy swept the floor.*
 c. *Tracy swept the floor clean.*

This regulation explains, as mentioned above, why causative achievements like *to break* do not allow the deletion of their patient arguments and, furthermore, why lexical accomplishments like *to tidy*, exhibiting the most complex event structure possible, typically do not permit an additional resultative modification:

(13) * *Max tidied the floor clean.*

Although Rappaport Hovav and Levin's (1998) approach has the advantage of specifying the exact nature of the monotonicity condition by implementing an additional Argument Realization Condition, it is again the issue of anticausatives that poses a challenge for the proposal. It assumes that the anticausative variant is associated with the same complex event structure as the causative alternant, see Rappaport Hovav and Levin (1998: 118). This analysis observes the monotonicity condition but violates the Argument Realization Condition, because the condition would predict the CAUSE component to be identified by an argument XP, which, obviously, is not the case with anticausatives.⁵

As can be seen, there is still reason to ask whether the monotonicity condition really provides an adequate tool for predicting the specific argument-structural options verbs can adopt. In the following, I shall examine a number of additional cases as they are related to the contrasts demonstrated in (2)–(4) above. In particular, I shall reflect upon the theoretical profit we gain from implementing the monotonicity condition as given in (5) in explaining why certain argument-structural modifications can be rescued by a generic reading while others cannot. For this purpose I shall adopt the following hypothesis:

(14) *Hypothesis*

A verb alternation is licensed under a generic reading if the alternation observes the monotonicity condition in (5).

Based on the discussion above, we are in a position to explicate the monotonicity condition and relate the notion of “truth-conditionally relevant material” in an LSR with event-structural information of a verb complex which must be realized in grammar, i.e., at the level of morphosyntax. To start, let us have a look at intransitive uses of transitive verbs like *to kill* as illustrated in (2a) and (2a') above.

3 Generic readings and their impact on verb alternations

3.1 The suppression of the internal argument in telic verbs

Consider the following examples:

- (15) a. * *The tiger killed today.*
 a.' *The tiger kills to survive.*
 b. * *A large fire destroyed on Monday.*
 b.' *A large fire always destroys.*
 c. * *The new janitor unlocked last week.*
 c.' *The new janitor just loves to unlock.*

Transitive achievement verbs like *to kill*, *to destroy*, or *to unlock*, and inherently telic transitive verbs in general, do generally not allow the suppression of their internal arguments. In specific contexts, however, a suppression improves noticeably, and a generic context is one of them: The generic, habitual expressions in (15a') and (15b') represent characterizing sentences, which contain kind-referring NPs, i.e., *the tiger* and *a large fire* both denoting a natural class, and (15c') is an example of a characterizing sentence with an object-referring NP as the subject.

How are generic interpretations able to repair an intransitive use in these achievements and render them acceptable? The key to this question lies in a central characteristic of generic expressions: As is known, they “report a kind of *general property*, that is, report a regularity which summarizes groups of particular episodes or facts”; see Krifka et al. (1995: 2); Carlson (1992). This characteristic is sketched in (16):

- (16) $\lambda z \text{ GENE } [P(e, z)] \rightarrow [Q(z)]$

As an approximation, we can formulate a general rule stating that any verbal complex *P* can be used as a generic expression if some property *Q* can be inferred from it.⁶ This implies that if a plausible *Q* is logically entailed in the expression, it will be “activated” by default for a generic interpretation of the expression. In (17), uttered in a prison, for example, the property *Q* is provided (trivially) by the predicate and its idiosyncratic meaning components:⁷

(17) A: *Wer schließt denn hier auf?*
 ‘Who unlocks [i.e., unlocks the cell doors]?’

B: *Hauptmann Meyer schließt auf!*
 ‘Captain Meyer unlocks!’

(18) *to unlock*_{GENERIC}
 $\lambda x \exists y \text{ GENE} [\text{CAUSE}(e, x, \text{BECOME}(\text{OPEN}(y)))] \rightarrow [\text{UNLOCKER}(x)]$

In an environment like this, Q represents the property of the agent argument x to be responsible to unlock something. For the generic interpretation, the internal argument variable y is bound existentially, which implies that for any *unlocking*-event there is an entity which satisfies the corresponding argument of the predicate. Now we are enabled to pin down the generic repair mechanism for these cases in a more systematic sense: (i) transitive achievement verbs can be interpreted intransitively under a generic interpretation and (ii) for this interpretation the internal argument variable has to be bound existentially to meet the condition in (16).

But what evidence do we have that the internal argument variable is indeed present in the LSR of intransitively realized verbs like *to unlock*? In German there is a particular group of transitive, inherently telic verbs like *abladen* (‘to unload’) or *unterzeichnen* (‘to sign’), i.e., instances of achievements and accomplishments, which can be used intransitively in non-generic contexts also, but only if the referent of the implicit argument can be contextually identified; see Engelberg (2002); Keller and Lapata (1998) for further discussion. Consider these examples:

- (19) a. *Hans fuhr den Möbelwagen vor und Hanna lud ab.*
 ‘Hans drove up the furniture truck and Hanna unloaded (it).’
 b. *Maria brachte den Vertrag mit und Max unterzeichnete.*
 ‘Maria brought the contract and Max signed (it).’

Likewise, *aufschließen* (‘to unlock’) can be used intransitively in contextually supporting environments in German:

- (20) *Max ging zur Tür und Maria schloss auf.*
 ‘Max went to the door and Maria unlocked (it).’

The suppressed internal arguments in these verb complexes – signified by the bracketed *it* in the English glosses in (19) and (20) – are not just somehow inferred via world knowledge in these constructions; they can even be argued to exhibit

definite reference. For instance, we can add a time-frame adverbial like *in ten minutes* to the accomplishment complex in (19a). This is odd with intransitively used activity verbs like *to write* or *to read*, which arguably do not contain a definite implicit entity; cf. Engelberg (2002); Härtl (2008):

- (21) a. *Hanna hat in zehn Minuten abgeladen.*
 ‘Hanna unloaded (some contextually present entity) in ten minutes.’
 b. **Hanna hat in zehn Minuten geschrieben/gelesen.*
 ‘Hanna wrote/read in ten minutes.’

According to Jacobs (1993), the implicit internal arguments in the above verb complexes figure as *specific* variables in the LSR whose interpretation is subject to special contextual requirements. Note, now, that the corresponding verb complexes, with a time-frame adverbial, are not very problematic in generic environments either:

- (22) a. *Hanna kann in zehn Minuten abladen.*
 ‘Hanna manages to unload (something) in ten minutes.’

These data indicate that the internal argument variable is not deleted semantically here, and we can conclude that the implicit argument *y* is indeed present in the LSR of the intransitivized verb complexes in generic contexts.

The proposed analysis of the intransitively realized verbs under discussion meets the requirements of the monotonicity condition: No truth-conditionally relevant material, i.e., an event-structural component or a corresponding argument slot, is discharged in the LSR underlying the respective expressions. Now, the question is raised if we can employ the condition to predict why a similar reduction operation produces an odd expression in non-generic, episodic contexts. Recall the examples:

- (23) a. *The tiger killed *(some prey) today.*
 b. *Max broke *(a vase) this morning.*
 c. *Mary destroyed *(her painting) last week.*

Part of the explanation⁸ for this effect must be that an episodic interpretation does not easily promote a *property reading*, which could license the suppression of the internal argument. We have argued above that for a generic interpretation a property of some kind needs to be inferred from the predicate, which can be

considered a precondition for the suppression of the internal argument. The situation is different in episodic environments: Here, inherently telic verbs denote a particular end-point of the event, i.e., a specific result state. So, a truth-value can only be assigned to an episodic, non-generic verb complex of the type in (23) if the argument of this result state can be identified. Thus, from a compositional perspective, the corresponding argument variable cannot be omitted or left implicit because this would violate the truth-conditional requirements holding for inherently telic verbs in contexts which do not promote a property reading.

This compact prose explanation has some interesting implications. First, in contexts which somehow encourage a property reading, constructions like those in (23) should be legitimized even in non-generic contexts. For example, imagine a situational context of an experimental study where different kinds of big cats in a laboratory are medically manipulated in such a way that they are expected not to kill prey. In a context like this, the information that a particular tiger engaged in the activity of killing at a certain point in time whereas, say, the lion did not, indeed has some informational relevance:

(24) *The tiger but not the lion killed the first time after three days of medication.*

The potency of property readings and their impact on the interpretation of verb complexes have been observed for other constructions as well in the literature. Maienborn (2008), (2009) examines stative passives in German and observes – contrary to conventional approaches – that practically all verb types, i.e., even non-resultative verbs like *streicheln* ('to pet') or stative verbs like *wissen* ('to know'), accept a stative passive if contextualized adequately:

(25) a. [uttered in the context of an experimental study on cat fur, testing the different fur care techniques of petting vs. brushing]

Diese Katze ist gestreichelt.

'This cat is petted.'

b. *Ist die Antwort wirklich gewusst oder einfach nur geraten?*

'Is the answer really known or just guessed?'

These examples show that via pragmatic licensing lexical semantic structures can be adapted profoundly to match contextual requirements. In her explanation, Maienborn employs a function that creates so-called *ad hoc properties* which assist a spontaneous object categorization relevant for certain contextual purposes. Typically, this categorization is based on contrasting sets: For the example in (25a) these are the two sets of cats that (i) have already been petted and those

that (ii) still need to be petted; and the sentence assigns the subject referent the property of belonging to the former set; see Maienborn (2009). Note that an analogous constellation can be observed in the examples in (15). They all denote a particular property, which is assigned to the subject referent to characterize it against a specific background set: With the sentence *The tiger kills to survive*, the subject referent, as a kind, is set apart from other kinds of animals; with a sentence like *A large fire always destroys* we contrast a particular type of fire with some other, say, a smoldering fire; just like we characterize the new janitor with *The new janitor just loves to unlock* in contrast to, e.g., the old one.

To sum up, whether or not we can infer a property and establish a certain contrast from it plays a central role in the interpretation of the constructions in question, which, in turn, harmonizes with the monotonicity condition. A second implication arising from the above explanation is that verbs which do not allow an existential binding of their internal argument cannot be used intransitively – not even in generic contexts. In the next section I shall look at a subset of stative verbs, of which some show this behavior.

3.2 The suppression of the internal argument in stative verbs

Note that the property reading in (26b) and (26c) does not increase the acceptability of intransitively realized phrases containing an epistemic verb like *to know*, to begin with:

- (26) a. **The quiz candidate knew last night.*
 b. **Students from Bavaria always know in the exam.*
 c. **Jim loves to know.*

It seems that the repair mechanism sketched in 3.1 fails: Why can verbs like *to know*, and other stative verbs like *to resemble*, *to own*, *to see* etc., not be used intransitively in any type of context and, in analogy to the semantic format in (18), their internal argument not be assigned an existential interpretation?⁹

- (27) *to know*_{INTRANSITIVE}
 * $\lambda x \exists y$ [KNOW(x, y)]

The answer to this question must imply that, not surprisingly, intransitive *to know* simply is not specific enough to derive a property from it that can be exploited for the categorization of the subject referent. Every human knows something, thus,

a monadic *know* cannot convey enough semantic content to denote a property of the subject referent.

How can we substantiate this thought? As is generally assumed, *to know* is a factive predicate and, as such, imposes a particular truth-conditional requirement on its complement: For *to know S* to be true, *S* itself must be true. Thus, the truth of *S* is presupposed with a *know*-complex and, therefore, must be identifiable and verifiable.¹⁰ This requirement holds for both a sentential as well as an individual complement of *to know*, and it does not hold for non-factive verbs like *to imagine*:

- (28) a. *John knows that Peter is a genius.*
 → Peter is a genius
- b. *John knows a famous singer.*
 → there is a famous singer
- c. *John imagined a famous singer.*
 ↷ there is a famous singer

Kiparsky and Kiparsky (1971) relate the presupposition requirement of factives to an important semantic quality of the complement of this type of predicate: Verbs which presuppose their sentential complement to be true also require their individual complements to be *specific*, see Kiparsky and Kiparsky (1971: 366). Consider the example of the factive verb *to ignore* the authors discuss in this context:

- (29) a. *I ignored an ant on my plate.*
 → there was a specific ant on my plate

The assumption is that a non-sentential complement of a factive verb denotes a referentially specific individual, which must be episodically or conceptually accessible. Let us see now how these interpretational qualities correlate with the linguistic facts. First, notice that an indefinite object nominal in the context of *to know*, by default, adopts a specific reading and not a “free choice” reading in the sense of universal *any* (cf. Kadmon and Landman 1993); see (30a). This is evident more clearly in German, where the pronoun *etwas* is ambiguous between the two readings of the indefinite distributive pronoun (*etwas Bestimmtes*, ‘something’) and the indefinite pronoun (*irgendetwas*, ‘anything’): A sentence like (30b) is interpreted naturally in a sense suggesting that Max knows something *particular* with respect to a certain contextual background, e.g., something about a certain secret kept from him, and not just *anything* at all:

- (30) a. *Does Max know something/anything?*
 b. *Max weiß etwas.*
 ‘Max knows something.’
 c. *Weiß Max denn irgendetwas *(über Spracherwerb)?*
 ‘Does Max know anything *(about language acquisition)?’

Likewise, (30c) shows that *irgendetwas* cannot function as the direct object of *to know* if the ontological domain of the object referent cannot be identified, or at least inferred from the context. This is different with activity verbs like *to drink*, which permit a “free choice” interpretation of the internal argument without problem in contextually underspecified environments:

- (31) a. *Hat Max denn irgendetwas getrunken/geschrieben/mitgebracht?*
 ‘Did Max drink/write/bring anything?’

Further, a negation of the internal argument of *to know* in an adversative sentence produces a (possibly not very strong) contradiction, which again indicates that the corresponding variable in the matrix clause has to be at least somehow conceptually available:

- (32) # *Max weiß etwas, aber ich habe nicht die leiseste Ahnung, was das ist.*
 ‘Max knows something but I do not have the faintest idea what it is.’

As can be seen, the internal argument of *to know* is subject to a semantic-conceptual specificity requirement. This property of *y* is provisionally expressed using an operator SPEC in the following LSR:

- (33) *to know*
 $\lambda x \text{ SPEC}_y [\text{KNOW}(x, y)]$

We are in a position now to suggest an explanation why an omission of the internal argument *y* is illicit with *to know*. An omission violates the monotonicity condition, because with this type of verb the corresponding argument variable must be identified syntactically in order to ensure a specific reading. Or put in other words: An omitted argument cannot be interpreted specifically. This assumption is borne out by the observation that unrealized internal arguments of activity verbs like *to read* can adopt an *unspecific* reading only, whereas a specific reading can be achieved solely by means of an explicit indefinite nominal; see Bresnan (1982); Jacobs (1993); Schopp (1995) for further discussion:

- (34) a. *Mary is reading.* [= unspecific internal argument]
 b. *Mary is reading something.* [= specific internal argument possible]

It can be concluded that leaving the internal argument of *to know* syntactically unrealized renders a reading not consistent with the interpretative directive in (33), which calls for a conceptually specific interpretation of the argument. Under the analysis in (33) elliptic constructions are predicted also, in which an omission of the internal argument is tolerated with *to know*:

- (35) A: *Max told me that he cheated in the exam.*
 B: *I knew!*

In constructions like this, the unrealized argument meets the interpretative requirement described above, because, here, the corresponding referent is conceptually accessible and the argument variable can be assigned a specific reading via a contextual binding provided by A's assertion.

We have made clear now why *to know* cannot be used intransitively: The internal argument variable of *to know* in an intransitive use can adopt an unspecific interpretation only, whereas the truth-conditions of the verb call for a specific reading of this argument. Nothing has yet been said about *to know* in generic environments. Note that not all attitude verbs – i.e., verbs like *to know*, *to regret*, *to believe* etc., which express a mental relation holding between the subject and a proposition – forbid a suppression of their complement. The non-factive attitude verb *to imagine* is an example:

- (36) *Many of us like to imagine but we have to be realistic.*

In contrast, *to know* does not accept an analogous generic or property reading, see (37a) and (37b), neither in an intransitive nor in a transitive use, see (37c):¹¹

- (37) a. **Many of us like to know.*
 b. **Students from Bavaria always know in the exam.*
 c. **Jim loves to know (the answer).*

The unacceptabilities shown in (37) require an additional explanation which considers the event-structural properties of *to know*. It belongs to a certain type of stative verb, sometimes referred to as Kimian state; see Engelberg (2005); Maienborn (2003). Kimian states, like *to know*, *to resemble*, *heißen* ('to be called'), are

strictly non-eventive and, therefore, cannot be realized as a generic expression in the intended sense, i.e., as an expression denoting a sum of episodes. Rather, they are instances of individual-level predicates, which do not supply an event variable; cf. Kratzer (1995). Thus, a generic interpretation, which the constructions in (37) target, would require a non-compositional operation that deletes the stative meaning constant in *to know* to coerce it into an eventive predicate, whose event variable would then have to be bound generically.¹²

This operation is blocked with *to know*. A shift from state to generic event is not generally excluded with non-eventive predicates, though. Consider the following examples:

- (38) a. *I love to love but my baby loves to dance.*¹³
 b. *Hugh Hefner kocht, isst und liebt für sein Leben gern.*
 ‘Hugh Hefner loves to cook, eat, and love.’
 c. *Professor Schneider repeats himself ad nauseam and bores to death.*

The examples show that psych-verbs like *to love* or *to bore* can be generics, i.e., they can denote a sum of events and express a general property of the subject referent. At the same time, an omission of the internal argument is licensed. In (38b), for example, *to love* is interpreted as a stage-level predicate thus implying an iteration of *love*-events. This interpretation cannot be achieved with *to know* because when we know something, we usually know it over a continuous period of time, which blocks an iterative reading.

As can be seen, intransitive *to love* is salient enough to express a property without any reference to a potential theme argument. Supporting evidence comes again from adversative constructions. In contrast to *to know*, with psych-verbs of the above type the accessibility of the internal argument referent *can* be negated in an adversative clause. Note the contrast between (32) and (39):

- (39) *Max liebt jemanden, aber ich habe nicht die leiseste Ahnung, wer das ist.*
 ‘Max is in love with somebody but I do not have the faintest idea who it is.’

These data suggest an LSR for *to love*, where no truth-conditionally relevant information is deleted in the intransitive use:

- (40) *to love*_{INTRANSITIVE}
 $\lambda x \exists y [\text{LOVE}(x, y)]$

The resulting reading parallels the meaning of expressions like *to be in love*, which can easily be used without a theme argument. This is also the reason why some psych-verbs can be used in “anti-generic” expressions, referring to a property for which the condition holds that it was true at least once. *To know*, on the other hand, cannot be used in this construction:

(41) *Even people like him have hated/*known once in their lives.*

To sum up, the reason why (26), i.e., *to know* in an intransitive use, is excluded is twofold: First, *to know* must realize its internal argument because it is subject to a particular specificity requirement, which calls for the object referent to be conceptually accessible. This is different with verbs like *to love*, in which the object can be unspecific and conceptually inaccessible. Second, psych-verbs like *to love*, *to hate* etc. can convey sufficient information about a corresponding property of the subject referent, whereas monadic *to know* does not carry enough information to say something significant about the subject referent. Further, *to know* cannot be used as a generic property because with this type of verb a sum of repeated episodes (i.e., “*know-events*”) cannot be conceptualized.

So far, the monotonicity condition accounts for argument-structural options in a principled way not only as an atomic lexical rule but also in systematic interdependence with the syntactic and pragmatic interfaces. To further elucidate this, I shall explore another area in the following section, where this interplay is particularly manifested.

3.3 Middles and the generic interpretation

The following examples show that in specific contextual configurations, otherwise unacceptable middle constructions¹⁴ can again increase in acceptability. Consider these examples from German:

- (42) a. **Dieses Obst kauft sich einfach prima.*
 ‘These fruit buy simply swell.’
- b. *Frisches Obst vom Marktstand: Das kauft sich besser ohne Abgase, finden die Grünen.*¹⁵
 ‘Fresh fruit from the market stall: It buys better without exhaust fumes, the Greens believe.’

- c. *Manolo-Blahnik-Schuhe kaufen sich bei Harrods einfach besser als bei Ebay.*
 ‘Manolo Blahnik shoes simply buy better at Harrods than on Ebay.’

Other verbs, however, cannot enter a middle alternation, no matter how suggesting the context may be:

- (43) a. **Die kleine Mia lehrt sich schwer.*
 ‘Little Mia teaches with difficulty only.’
 b. **Schüler aus Problemfamilien lehren sich wirklich schwer.*
 ‘Students from problem families really teach with difficulty only.’

To begin with, let us consider a central semantic condition, which middle constructions are subject to in languages like English and German: Middles canonically involve an agentive entity, cf. Ackema and Schoorlemmer (2006); Fagan (1992); Roberts (1987), where the term “agentive” must be understood in a more general sense. It simply indicates that an entity must be contained in a middle which can somehow *evaluate* the event described, where the evaluation function is typically expressed by means of adverbs like *well* or *easily*. Therefore, verbs like *finden* (‘to find’) or *hinfallen* (‘to fall’), which do not entail an agentive / evaluative component in their default semantics, are somewhat odd in a middle construction:

- (44) a. **Der Hundert-Euro-Schein fand sich gut.*
 ‘The 100-euro note found easily.’
 b. **Auf dieser Treppe fällt es sich ohne Schmerzen hin.*
 on these stairs falls it REFL without pain down
Intended meaning: ‘One falls without pain on these stairs.’

In contexts that promote a generic reading, however, these verbs can be used as middles without much ado. For example, in (45a) an alternative reading of *finden* (‘to find’) is evoked, which implies an intentional search for something:

- (45) a. *Pfifferlinge finden sich am besten unter Nadelbäumen.*
 ‘Chanterelles find best under conifers.’
 b. *In weichem Schnee fällt es sich leichter.*
 in soft snow falls it REFL more easily
 [Intended meaning: ‘In soft snow, one falls with less pain.’]

- c. *Besoffen fällt es sich leichter vom Stuhl.*
 drunk falls it REFL more easily off the chair
 [Intended meaning: ‘If drunk, one falls off a chair with less pain.’]

In (45a), for example, the generic interpretation is related to the NP *chanterelles* denoting a kind of a subordinate level category of mushrooms and a particular property associated with this kind, i.e., its prototypical location. The explanation for the contrast between (44) and (45) must imply that middles themselves function as generic sentences, thus, via the generic embedding involving kind-reference as in (45), the genericity characteristic inherent in middles can be realized. In agreement with the monotonicity condition, the property reading in (45) triggers an evaluative entity to be deduced by means of a pragmatic inference: *To find mushrooms* presupposes *to look for mushrooms*, which, in turn, contains an agentive role with which the evaluative function sketched above can be associated. Likewise, *to fall in soft snow* relates conceptually to somebody, who, say, skis and for whom falling is something to be handled as comfortably as possible. Something similar applies to (45c).

As can be seen, the interpretation of a generic property can assist the pragmatic deduction of an evaluative entity, thus facilitating the linguistic adequacy of the constructions under discussion. In a parallel fashion, kind-reference of the subject NP can foster the acceptability of verbs like *to buy* in a middle construction. Recall the examples in (42b) and (42c). Why do they exhibit increased acceptability in comparison to the one given in (42a)? Part of the answer lies again in the genericity requirement middles are subject to. With punctual verbs like *to sell*, *to kick*, *to shoot* etc., the default middle semantics implies a quantification over event instantiations, from which a certain property of the subject referent can be deduced. This means that a collection of identical episodes needs to be semantically construed with middle VPs like *NP sells/kicks/shoots easily*. Note that the requirement for a middle to support this “iterated event” reading arises only with punctual verbs.¹⁶ Durative verbs, like *to read*, *to build*, or *to complete* are not subject to this requirement; compare *This book reads easily* and *This book sells easily*. Therefore, a durative verb like *erwerben* (‘to acquire’), which is conceptually fairly similar to *to buy*, accepts a middle with significantly less difficulty:

- (46) *Dieser Leistungsschein erwarb sich ohne große Mühe.*
 ‘This graded credit acquired without much effort.’

We can explain now why (42a) is out. *To buy* is a punctual verb but it cannot naturally satisfy the semantic requirement posed by this type of middle: *To buy*

these bananas, in its default interpretation, can only refer to a singular event, whereas the respective middle calls for an iteration of *buy*-events. Thus, as soon as contextual information supports the “iterated event” reading, the construction improves. This can be seen in (42b) and (42c), where the required interpretation is achieved via the kind-referring subject NPs *fresh fruit* and *Manolo Blahnik shoes*, which, as natural classes, can figure as themes of plausibly iterated instances of *buy*-events; cf. Steinbach (2002: 273) for a related analysis.¹⁷

However, this cannot be the entire story. Note that the sentences in (42b) and (42c) both involve a contrast between sets of ontologically plausible alternatives. In (42b) this is the contrast between buying fresh fruit with and without exposure to exhaust fumes, just like in (42c) a contrast between buying expensive shoes at a nice place like Harrods and a less pretentious internet auction is evoked. As mentioned above, a middle attributes a generic property of some sort to an entity. Crucially, this semantic condition can be fulfilled by contrasting and thus focusing on a particular conceptual characteristic of the entity, i.e., the fruit and the shoes in (42b) and (42c). We can conclude that establishing a contrast with specific alternatives licenses the construction of an ad hoc property, which, in turn, satisfies the semantic condition for middles to express a generic property. Thus, the contrast relation serves as a contextual anchor for inferring a communicatively salient property, i.e., *Q* in (47):¹⁸

- (47) *to buy*_{MIDDLE}
 $\lambda y \exists x \text{GENe} [\text{WELL-BUY}(e, x, y) \ \& \ \text{WITHOUT-FUME}(e) \ \& \ \text{CONTRAST}(Q(e), Q'(e))]$ (fresh fruit)
 / *Q* = “with exhaust fumes” /

The suggested analysis parallels a related proposal put forward in Maienborn (2008), (2009) in her investigation of adjectival passives; see also section 3.1 above. For our purposes, the idea is that the context in (42b) and (42c) provides an appropriate contrast relation, which is exploited for the interpretation of the middle, because the middle predicate can attribute a certain property to some entity only if this property contrasts with some other. Consider the examples in (48), which illustrate some potential contrast relations involved in middles sentences:

- (48) a. *This book reads easily.*
 → some other book does not read easily
 b. *The wall paints easily.*
 → the floor does not paint easily

- c. *My new skirt irons nicely.*
 → the old one does not iron nicely

Brandt (2009) coined the notion of “verkappter Vergleich” (‘comparison in disguise’) to describe the contrast directive present in middles. According to Brandt, middles express a comparison of the subject referent with the natural class this referent belongs to; see also Dowty (2001) for a related approach. For example, *this book reads easily* can only be interpreted against the background of a comparison between *this book* and the natural class of books. The critical point about middles is, says Brandt, that their semantics is based on a contradiction: The subject referent is attributed a particular property (e.g., to be read easily) which is distinct from the prototypical characteristics of the corresponding natural class; and it is the modal interpretation of middles (*can* be read easily) which resolves this contradiction.

Taken together, the above insights provide us with a simple explanation why sentences like (42b) and (42c) are better than (42a): The former support a contrast relation in a transparent way whereas the latter does not. Further, only with a kind-referring subject, as in (42b) and (42c), a verb complex containing *to buy* can satisfy the requirement for punctual verbs to support an “iterated event” reading with a middle. The question remains why some middles resist improving even in environments which strongly promote these semantic characteristics. Stative verbs show this behavior, to begin with:

- (49) a. **Dolly Parton does not resemble easily.*
 b. **The answer to this question does not know easily.*
 c. **Gundula Geißböcker heißt es sich nicht einfach.*
 Gundula Geißböcker calls it REFL not easily
 [Intended meaning: ‘It is not easy to be called Gundula Geißböcker.’]

This effect is easy to explain. The verbs in these examples are instances of individual-level predicates, which do not contain an event variable; cf. Carlson (1977); Kratzer (1995). However, middles, because of their generic character, require their verb to be eventive, which would trigger a non-monotonic deletion of the stative component inherent in these verbs; see Condoravdi (1989) and Zwart (1998). Thus, the alternation is blocked in these cases. A somewhat different kind of explanation is needed for unacceptable constructions containing psych-verbs:

- (50) a. * *Math homework does not love easily.*
 b. * *An iPhone hates with difficulty only.*

We have learned in section 3.2 that verbs like *to love* and *to hate* represent stative verbs, which can be coerced into an eventive semantics. This eventive potential of psych-verbs also explains why the past tense in, e.g., *Bill hated the iPhone* does not give rise to a “lifetime effect”, which is a test for individual-level predicates: The sentence does not entail the ceasing of existence of the subject referent *Bill*; compare *She was called Gundula Geißböcker*.

So, if psych-verbs do not feature as individual-level predicates, why are they not acceptable as middles as is demonstrated in (50)? We have two options to explain the ungrammaticality. First, we could relate it to the fact that with psych-verbs an evaluative modification, as is typical of middles, is blocked. This reasoning, however, is questioned by the existence of active paraphrases like in (51), which allow an evaluation of a psychological state, namely by means of the attributes *hard* and *easily*:

- (51) a. *It is hard to hate this guy.*
 b. *This song can be loved easily.*

So, in principle, psych-verbs of this type tolerate an evaluative modification. An alternative explanation for the ungrammaticality in (50) could imply that verbs like *to love*, *to hate*, *to fear* etc. resist an existential binding of their experiencer role, i.e., their external argument. Jaeggli (1986) formulated a constraint stating that if a complement of a verb is unaffected, as is the case with experiencer-subject verbs, the external argument must be syntactically realized. Accordingly, a verb like *to love* cannot enter a middle. This could explain also why experiencer-object verbs like *to frighten*, which do involve a complement affected by the verbal action, enter middle constructions of the following type with less difficulty:

- (52) a. *Max does not frighten easily.*
 b. *Mary bores easily with most toys.*

Jaeggli’s affectedness constraint, however, is challenged by the vagueness of the notion “affectedness” and, furthermore, by the presence of various middles involving unaffected themes as in *Nursery rhymes learn easily*, which are incorrectly predicted to be excluded by the constraint, see Marelj (2004) for further discussion. An additional problem for the constraint is the felicitous passiviza-

tion of experiencer-subject verbs as in *He is loved*, which also leaves implicit an external role. The issue cannot be solved here. It requires a deeper analysis of the argument-structural properties of psych-verbs, which is beyond the scope of this paper. The examples in (50), however, illustrate that pragmatic intervention in the domain of lexical semantics has to adhere to certain rigid grammatical regulations, which limit contextual adjustment and determine specific realization options. Another instance of such a “hard” constraint is given in (43), repeated here for the sake of convenience:

- (53) a. **Die kleine Mia lehrt sich schwer.*
 ‘Little Mia teaches with difficulty only.’
 b. **Schüler aus Problemfamilien lehren sich wirklich schwer.*
 ‘Students from problem families really teach with difficulty only.’

Why does the generic environment in (53b), i.e., the kind-referring subject NP, not render the construction any more acceptable than (53a)? Focusing on thematic structure, Hoekstra and Roberts (1993) argue that (English) middles cannot promote a goal argument to be realized as subject, i.e., *little Mia* and *students from problem families* in (53). This explanation, however, is questioned, at least for German, by the verb *unterrichten* (‘to instruct’), which is semantically equivalent to *lehren* (‘to teach’) but permits its goal argument to be realized as the middle subject without problem:

- (54) a. *Die kleine Mia unterrichtet sich schwer.*
 ‘Little Mia instructs with difficulty only.’
 b. *Schüler aus Problemfamilien unterrichten sich schwer.*
 ‘Students from problem families instruct with difficulty only.’

Further, causative verbs like *bestreichen* (‘to paint’) or *beschenken* (‘to present’), which both involve a (locative as well as recipient) goal argument, do not resist the middle alternation in German:

- (55) a. *Gebeiztes Holz bestreicht sich leichter mit Ölfarbe.*
 stained wood paints REFL more easily with oil paint
 b. *Kleine Kinder beschenken sich einfach.*
 little children present REFL easily
 ‘It is really easy to make a present to little children.’

As these examples illustrate, goal arguments can be realized as middle subjects in German and the explanation for the ungrammaticality shown in (53) must lie somewhere else. An alternative explanation comes from Fagan (1992). She argues that, in general, ditransitive verbs cannot be used as middles, which would exclude *to teach* from the middle formation. However, as has been observed elsewhere in the literature, this condition is also too strong; see Marelj (2004) and Steinbach (2002) for a detailed discussion. For instance, it is challenged by the existence of felicitous German middle constructions based on ditransitive verbs like *stellen* ('to put') or *geben* ('to give') as shown in (56) as well as *abfragen* ('to test'), which involves two accusative objects just like *lehren*; see (57) and (58):

- (56) a. *Design-Möbel stellen sich natürlich leicht ins Wohnzimmer.*
 design furniture puts REFL of course easily in the living room
 'Of course, it is easy to put design furniture in your living room.'
- b. *Einer netten Kellnerin gibt sich leicht ein Trinkgeld.*
 a nice waitress gives REFL easily a tip
 'A nice waitress tips easily.'
- (57) *Gestern hat der Lehrer den kranken Schüler die Chinesisch-*
 yesterday has the teacher [the sick student].ACC [the chinese
Vokabeln abgefragt.
 vocab].ACC tested
 'Yesterday the teacher tested the sick student on the Chinese vocab.'
- (58) a. *Chinesisch-Vokabeln fragen sich schwer ab.*
 'Chinese vocabulary tests with difficulty only.'
- b. *Kranke Schüler fragen sich schwer ab.*
 'Sick students test with difficulty only.'

The unproblematic sentences in (58a) and (58b) demonstrate that both object arguments of *abfragen* can be realized as middle subjects. Taken together, these data indicate that the criterion of ditransitivity cannot be used either to account for the ungrammaticality of the examples in (53) above. The account I shall propose relies on the monotonicity condition and the following additional restriction functional in the middle alternation:

(59) *Argument-structural restriction on middles*

If a verb argument structure contains two object arguments, the direct object argument must be promoted to the subject of a corresponding middle construction.

This restriction explains the ungrammaticality displayed in (53) as follows: In both constructions, an indirect object is promoted to the subject position, whereas the direct object is omitted, which is ruled out by the above restriction. Consider the following examples, which again illustrate the effect:

- (60) a. *Bill lehrt die älteren Schüler den neuen Stoff.*
 ‘Bill teaches the older students some new material.’
- b. **Die älteren Schüler lehren sich gut.*
 ‘The older students teach well.’
- c. *Der neue Stoff lehrt sich gut.*
 ‘The new material teaches well.’
*to teach*_{MIDDLE}
 * $\lambda z \lambda y \exists x \text{ GENE} [\text{CAUSE}(e, x, \text{BECOME}(\text{KNOW}(y, z)))]$

Under the restriction given in (59), (60b) is ungrammatical because the subject NP *die älteren Schüler* (‘the older students’) relates to an indirect object y in (61) and the direct object z is illicitly omitted. But what grammatical evidence do we have that *die älteren Schüler* in (60a) really is an indirect object in opposition to *den neuen Stoff* (‘the new material’), which is considered a direct object in the above explanation? Evidence comes from attributive past participles, which can be used to modify direct objects only but not indirect objects; cf. Perlmutter (1978):

- (62) a. *der gelehrte Stoff*
 ‘the taught material’
- b. **die gelehrten Schüler*
 ‘the taught students’

As is known, a modification of this type is felicitous only with an NP which figures as direct object in the LSR underlying the attribute. This bears out the assumption that (60b) is excluded, because the NP *die älteren Schüler* does not stem from a direct object position. Note that the restriction formulated in (59) correctly predicts the grammaticality of (58a) and (58b). Both arguments of German *abfragen*

(‘to test’) can figure as direct object in the LSR as the participle test indicates; see (63a) and (63b). The same holds for *unterrichten* (‘to instruct’) in (54):

- (63) a. *die abgefragten Schüler*
 ‘the tested students’
- b. *die abgefragten Vokabeln*
 ‘the tested vocabulary’
- c. *die unterrichteten Schüler*
 ‘the instructed students’

Finally, the restriction in (59) rightly predicts that a mono-transitive verb with a lexical dative is felicitous as middle; see (64a), whereas a ditransitive complex containing a structural dative can be realized as middle only if the direct object is realized overtly; see (64b) and (64c):

- (64) a. *Einem Patenonkel hilft es sich leicht.*¹⁹
 [a godfather].DAT helps it REFL easily
 ‘A godfather helps easily.’
- b. **Einer Patentante schickt es sich leicht.*
 [a godmother].DAT sends it REFL easily
 ‘A godmother sends easily.’
- c. *Einer Patentante schickt sich ein Bettelbrief leicht.*²⁰
 [the godmother].DAT sends REFL a begging letter easily
 ‘It is easy to send a begging letter to a godmother.’

To sum up, we have singled out some central conditions, which license the middle alternation and determine the impact a generic context can make on the interpretation. We have learned that impossible middles like **to find easily* can improve in contexts that support an evaluative semantics and promote the genericity requirement inherent in middles. In particular, kind reference of the subject NP and a related contrastive semantics, which support the typical characteristic of middles to express a generic property, have been found to improve middles that are otherwise unacceptable. Crucially, then, certain argument-structural requirements cannot be “overwritten”; for example, stative verbs like *to resemble*, which figure as individual-level predicates, cannot enter the middle alternation because this would require a non-monotonic deletion of the verb’s stative component. Likewise, verbs like *to teach* do not support a promotion of their indirect object to be realized as middle subject, with the explanation that if a direct object is

present in the verb's LRS, it must be promoted to the middle subject and not excluded from the alternation.

3.4 Conclusion

The results of the above case studies lead us to accept the hypothesis formulated in (14): An argument alternation is licensed under a generic interpretation only if the alternation observes the monotonicity condition, which holds that no truth-conditionally relevant material may be deleted from the predicate's LRS. Let us recapitulate the data now, which have led to this conclusion.

First, it was argued in section 3.1 that inherently telic verbs like *to kill* or *to unlock* can be realized intransitively in a generic context because it promotes a property reading. Under this reading, and as a repair mechanism employed to ensure the interpretation, the internal argument variable is bound existentially. Thus, the monotonicity condition is respected. A property reading is not canonically evoked in non-generic, episodic environments. Instead, in episodic contexts, a specific change-of-state is semantically entailed with these verbs. This meaning component cannot be identified, however, if the internal argument is left unrealized, thus violating the monotonicity condition. The analysis is supported by the observation that as soon as a property reading can be achieved in a non-generic context, the suppression of the argument is licit again; see the discussion on the "laboratory" reading illustrated in the example in (24). It was concluded that the property reading associated with a generic interpretation and the establishment of a corresponding contrast figure as crucial criteria which can license an argument alternation.

In section 3.2, I addressed the question why a generic interpretation cannot save stative verbs like *to know* from grammatical unacceptability when used intransitively. The answer lies in a certain specificity requirement this type of verb is subject to: *To know*, as a factive verb, is not informationally salient enough to attribute a particular property to its subject referent. This insight is supported by the observation that an indefinite object NP in a *know*-complex canonically adopts a specific reading (i.e., *to know something particular*) and not a universal reading (*to know anything*); see the examples in (30) above. Thus, an omission of the internal argument would involve a non-monotonic operation, rendering the suppression of the argument unacceptable. Another reason for the unacceptability of constructions like **Jim loves to know* lies in the fact that *to know* is a stative verb, a Kimian state, which resists being coerced into an eventive reading. This, however, would be required by a generic construction of this type, which denotes a sum of episodes and not just a singular state. This also explains the accept-

ability of psych-verb complexes like *Hugh loves to love* because, here, an iterative reading is conceptually plausible, which, in turn, is linked to the option to licitly leave the theme argument unrealized.

In the third part of this paper, licensing conditions for the middle alternation were examined. Again, the attribution of a property to the middle subject, achieved through kind-reference, and the establishment of a contrasting set of alternatives were found to figure as key criteria in authorizing the alternation; see (47) and (48) above. Linked to this is the requirement of middles to call for an evaluative entity. For instance, *in weichem Schnee fällt es sich leichter* ('in soft snow falls it REFL more easily') is acceptable because the implicit theme argument of *to fall*, i.e., the faller, can in this case be successfully associated with the evaluative function inherent in middles, here expressed by means of *easily*. A contrast directive was again found to be functional in the semantic rescue operation a generic context can elicit, which raised the question, however, why certain argument structures resist being altered even in contrastive environments. Once more, it was the monotonicity condition which was observed to be operative and which can be used to explain the unacceptability of constructions like **Mary teaches easily*. It was argued for an additional argument-structural restriction to be effective in the middle formation: The restriction blocks a non-monotonic exclusion of a direct object of a ditransitive verb when realized as middle, thus predicting the options different verbs have with respect to this particular alternation.

All in all, generic interpretations can authorize verb alternations that are otherwise unacceptable if they adhere to the monotonicity condition. The licensing conditions which determine the alternations critically rely on whether or not (i) a property reading and (ii) a contrast relation can be established in the interpretation. We can conclude that the monotonicity condition functions as a central linking device operative at the interface between syntactic, lexical semantic, and conceptual representations, and in the mapping of structures between these levels in general.

4 General discussion

The current paper contributes to the discussion about the boundary between grammatical and pragmatic structure building; see, among others, Engdahl (1999); Maienborn (2003). In particular, I have explored the effect contextual and pragmatic information can have on lexical semantic structures and the rigidity of lexical features in the linking procedures applied to verbs. The central question is

if pragmatically rooted repair mechanisms can adjust lexical structures in a more or less omnipotent fashion, or if lexical principles exist which are traded as hard-wired in the lexical system and whose grammatical realization is thus compulsory. As we have seen, the construction of an ad hoc property and a corresponding contrast relation function as influential semantic mechanisms, which can tweak lexical representations to match certain contextual requirements. These mechanisms are pragmatically rooted and guarantee the accomplishment of cooperative principles of communication for an expression to be linguistically adequate. We have also learned, however, that contextual adjustment must adhere to a subset of strict lexical principles, which monitor the linking mechanisms such that certain minimal requirements must be fulfilled in the resulting expression. These requirements are of semantic provenance. However, they find their expression in a structural constraint, which states that in the derivation no truth-conditionally relevant material may be removed from a lexical representation. In the current paper, in sum, the monotonicity condition is considered a central linking principle, which is anchored in the grammatical system. The principle cannot be negotiated to be discharged by non-linguistic factors somehow bypassing rigid lexical constraints via a pragmatic tier. Finally, as should be obvious, the approach argued for in this paper rests on a derivational theory of the lexical semantic system, where compositional structure building mechanisms operating on discrete lexical entities are implemented in the mental lexicon. Alternative approaches as relating, for example, to *Construction Grammar* theory; see Goldberg (1995), cannot account for the examined correlations between inherent lexical properties verbs and contextually induced adjustments, which are systematically linked to the compositional characteristics of the different verb classes. It is a matter for future research, though, to verify the degree to which the regulations determined here can be applied to other types of verb argument alternations.

Notes

* I wish to thank Anja Lübbe, Andrew McIntyre, Kerstin Schwabe, Ilse Zimmermann, and an anonymous reviewer as well as the audiences of the workshop “Repairs” at the DGFS conference at Universität Osnabrück and the workshop “Event Semantics” at the IDS in Mannheim for their insightful suggestions and comments. In addition, I would like to thank Friederike Kreter and Sven Kotowski for their help with the manuscript.

1 In this paper I shall use the asterisk to indicate any linguistically marked expression, which contrasts with a more acceptable one to a significant extent. I am thus ignoring a certain interpretation of the sentences in (2) for the moment, which renders the sentence conceivable. I shall discuss this interpretation in section 3.1 below.

2 Likewise, *by itself* is compatible with unaccusative verbs like *to bloom* that do not have a causative alternate: *These flowers do not bloom by themselves! Full sunlight and a nitrogen fertilizer will make them bloom.* Again, under the assumption that *to bloom* does not contain a CAUSE, *by itself* does not seem to verify the presence of a cause component in anticausatives. Rather, *by itself* should be considered an expression that cancels an *implicature*, which arises with change-of-state verbs, saying that for any change, a cause can be deduced.

3 I am ignoring reflexive unaccusatives like *sich öffnen* ('to open'), *sich lösen* ('to loose') here. Their individual properties call for a separate treatment. For example, a dative NP in the context of *sich lösen* cannot be interpreted as causer: *Die Gummidichtung hat sich (*dem Mechaniker) gelöst* ('The rubber seal loosened (on the mechanic).'), which is possible with non-reflexive unaccusatives, see above.

4 See Rappaport Hovav and Levin (1998: 109).

5 The assumption of a null morpheme speculated by the authors to satisfy the external argument position in anticausatives, requires additional evidence which needs to be motivated on independent grounds.

6 Of course, this formulation focuses on lexical semantic properties of verbs and ignores aspects of the referential and ontological anchoring of the argument referents. For further discussion see, e.g., Mueller-Reichau (2006). Conceptual factors need to be considered for a complete understanding as, for instance, the felicity of the example in (15c') is strongly dependent on the conceptual properties of the subject NP *the janitor*: Replacing it with a less prototypical agent like *the milkman* makes it much more difficult to find an acceptable interpretation for the sentence.

7 An anonymous reviewer speculated that a property reading may be identified, for example, where it circumvents a contradiction. Seizing this idea, note the following contrast: In (i) a contradiction is produced between the clause containing the intransitive, non-generic verb form and the *but*-clause containing the proposition negated. This contradiction dissolves under a property reading as the sentence in (ii) illustrates, with the explanation that the property reading and the specific reading do not clash anymore (see Chapter 3.2 also for a discussion of the contrastive semantics of middles):

(i) # The janitor unlocked but he did not unlock anything.

(ii) The janitor loves to unlock but he did not unlock anything.

8 I shall ignore event-structural aspects as they relate to the interplay between *Aktionsart* and viewpoint aspect and refer the reader to the relevant literature on this issue, e.g., Herweg (1990); Rothstein (2004) and many others.

9 From a semantic perspective, the LSR in (27) relates to German *kennen* and not *wissen*. In contrast to *wissen*, *kennen* does not involve a sentential complement: *John weiß / *kennt, dass Peter ein Genie ist* ('John knows that Peter is a genius'). *Kennen* only predicates over an individual complement, *John kennt die Antwort* ('John knows the answer'). *Wissen* can predicate over an individual complement, too, via which, however, an implicit proposition of some kind has to be accessible: *John weiß die Antwort / *die Lampe* ('John knows the answer / *the lamp'). See Umbach (2008) for an analysis.

10 See Kiparsky and Kiparsky (1971); Levinson (1993); Postal (1972) among many others for the semantic and grammatical characteristics of this type of predicate.

11 Apparent counterexamples like *He loves to know other cultures* do not express the reading intended here, namely, a generic sentence denoting a sum of iterated *know*-episodes. This sentence simply expresses a psychological state of the experiencer, who loves a certain other state, i.e., the state of knowing something.

12 See Ackema and Schorlemmer (1994) for a similar reasoning, regarding the ungrammatical intransitive use of *to know* in non-generic contexts, though. They argue that **She knows* is out because *to know* does not involve an “action tier”, i.e., an activity component of some kind, which would be necessary for the internal argument to be suppressed felicitously. Under this analysis, expressions like *A man must have hated at least once in his life* are somewhat problematic as they cannot be argued to entail an activity with their default interpretation either but still allow a suppression of their internal argument. I shall discuss these constructions below.

13 Source: Song by Tina Charles.

14 For elaborated theoretical descriptions of this construction see, among many others, Condoravdi (1989); Fagan (1988); Kaufmann (2001); Steinbach (2002).

15 Source: Aachener Nachrichten, section “Lokales Eschweiler”, 25-Nov-2008. Note that the varying acceptability of many of the examples in the current section is utilized for quite different kinds of reasons in the scholarly debate on middles. So, the reader should be prepared to find unstarred examples that have been considered unacceptable elsewhere or vice versa.

16 This fact is often overlooked and some scholars have been tempted to postulate a restriction that incorrectly excludes punctual verbs, i.e., achievements, from the middle alternation; see Fagan (1992: 68); Sanz (2000: 111); cf. Zwart (1998) for further discussion.

17 This analysis disagrees with proposals that have been put forward in the literature to explain the ungrammaticality of *to buy* in a middle. For example, Fagan (1992) employs a *responsibility condition*, which requires the middle subject to be responsible for the action expressed by the predicate. Following this reasoning, **The new Ford buys easily* is out because a Ford does not have intrinsic properties which make buying it easy; cf. also Ackema and Schorlemmer (2006) and Zwart (1998). I believe the explanation proposed here to be less costly for the lexical system. For more discussion on this issue see Steinbach (2002).

18 A comprehensive semantic representation for, e.g., (42b) must also encode that the reference of the adverb *well* is dependent on the truth-value of the ad hoc property *Q'* (*without exhaust fumes*): The theme referent can be bought well only if *Q'* is true.

19 I am disregarding the status of the expletive pronoun in impersonal middles of the type in (64a). For further discussion see Steinbach (2002).

20 I am aware that this construction is ungrammatical in English: **A begging letter sends a godmother easily*. The question if this calls for a parameterization of ditransitive middles cannot be addressed here. For further discussion see Fagan (1992); Marelj (2004); Steinbach (2002) among others.

5 References

- Ackema, Peter and Maaike Schoorlemmer. 1994. The middle construction and the syntax-semantics interface. In: *Lingua* 93: 59–90.
- Ackema, Peter and Maaike Schoorlemmer. 2006. Middles. In: Martin Everaert and Henk van Riemsdijk (eds.), *The Syntax Companion – Vol. III*, 131–203. Oxford: Basil Blackwell.
- Alexiadou, Artemis, Elena Anagnostopoulou, and Florian Schäfer. 2006. The properties of anti-causatives crosslinguistically. In: Mara Frascarelli (ed.), *Phases of Interpretation*, 187–211. Berlin: Mouton de Gruyter.

- Brandt, Patrick. 2009. Generische Möglichkeit in Medialkonstruktionen. In: Werner Abraham and Elisabeth Leiss (eds.), *Modalität. Epistemik und Evidentialität bei Modalverb, Adverb, Modalpartikel und Modus*, 79–100. (Studien zur deutschen Grammatik 77.) Tübingen: Stauffenburg.
- Bresnan, Joan. 1990. Monotonicity and the theory of relation-changes in LFG. *Language Research* 26 (4): 637–652.
- Bresnan, Joan (ed.). 1982. *The Mental Representation of Grammatical Relations*. Cambridge, MA: MIT Press.
- Carlson, Greg N. 1977. A unified analysis of the English bare plural. *Linguistics and Philosophy* 1(3): 413–458.
- Carlson, Greg N. 1992. Natural kinds and common nouns. In: Arnim von Stechow and Dieter Wunderlich (eds.), *Handbook of Semantics*, 370–398. Berlin: Mouton de Gruyter.
- Chierchia, Gennaro. 1995. Individual-level predicates as inherent generics. In: Greg N. Carlson and Francis J. Pelletier (eds.), *The Generic Book*, 176–223. Chicago/London: University of Chicago Press.
- Chierchia, Gennaro. 2004. A semantics for unaccusatives and its syntactic consequences. In: Artemis Alexiadou, Elena Anagnostopoulou, and Martin Everaert (eds.), *The Unaccusativity Puzzle*, 22–59. Oxford: Oxford University Press.
- Condoravdi, Cleo. 1989. The middle: where semantics and morphology meet. *MIT Working Papers in Linguistics* II: 16–30.
- Dowty, David. 1979. *Word Meaning and Montague Grammar—The Semantics of Verbs and Times in Generative Semantics and in Montague's PTQ*. Dordrecht: Reidel.
- Dowty, David. 2001. The semantic asymmetry of 'argument alternations' (and why it matters). In: Geart van der Meer, and Alice G. B. ter Meulen (eds.), *Making Sense: From Lexeme to Discourse*. (Groninger Arbeiten zur germanistischen Linguistik Nr. 44.) Groningen: Center for Language and Cognition Groningen.
- Dowty, David. 2007. Compositionality as an empirical problem. In: Chris Barker and Pauline Jacobson (eds.), *Direct Compositionality*. Oxford: Oxford University Press.
- Engdahl, Elisabet. 1999. Integrating pragmatics into the grammar. In: Lunella Mereu (ed.), *Boundaries of Morphology and Syntax*, 175–194. Amsterdam: John Benjamins.
- Engelberg, Stefan. 2002. Intransitive accomplishments and the lexicon: The role of implicit arguments, definiteness, and reflexivity in aspectual composition. *Journal of Semantics* 19: 369–416.
- Engelberg, Stefan. 2005. Kimian states and the grammar of predicative adjectives. *Theoretical Linguistics* 31: 331–347.
- Fagan, Sarah. 1988. The English middle. *Linguistic Inquiry* 19: 181–203.
- Fagan, Sarah. 1992. *The Syntax and Semantics of Middle Constructions: A Study with Special Reference to German*. Cambridge: Cambridge University Press.
- Goldberg, Adele E. 1995. *Constructions: A Construction Grammar Approach to Argument Structure*. University of Chicago Press.
- Härtl, Holden. 2003. Conceptual and grammatical characteristics of argument alternations. The case of decausative verbs. *Linguistics* 41 (5): 883–916.
- Härtl, Holden. 2008. *Implizite Informationen. Sprachliche Ökonomie und interpretative Komplexität bei Verben*. (studia grammatica 68.) Berlin: Akademie.
- Herweg, Michael. 1990. *Zeitaspekte. Die Bedeutung von Tempus, Aspekt und temporalen Konjunktionen*. Wiesbaden: Deutscher Universitäts-Verlag.

- Hoekstra, Teun and Ian Roberts. 1993. Middles in Dutch and English. In: Eric J. Reuland and Werner Abraham (eds.), *Knowledge and Language: Vol. II. Lexical and Conceptual Structure*, 185–222. Dordrecht: Kluwer Academic Publishers.
- Jacobs, Joachim. 1993. *The Lexical Basis of Optional Complements*. (Arbeiten des SFB 282, Nr. 53) Wuppertal.
- Jaeggli, Osvald. 1986. Passive. *Linguistic Inquiry* 17: 587–622.
- Kadmon, Nirit and Landman, Fred. 1993. Any. *Philosophy and Linguistics* 16 (4): 353–422.
- Kaufmann, Ingrid. 2001. Medium und Reflexiv. Habilitation. Universität Düsseldorf.
- Keller, Frank and Maria Lapata. 1998. Object drop and discourse accessibility. In: Kimary Shahin, Susan Blake and Eun-Sook Kim (eds.), *Proceedings of the 17th West Coast Conference on Formal Linguistics*, 362–374. Stanford: CSLI Publications.
- Kiparsky, Paul. 1982. Word-formation and the lexicon. In: Fred Ingeman (ed.), *Proceedings of the 1982 Mid-America Linguistics Conference*, 3–29. Lawrence, Kansas.
- Kiparsky, Paul and Carol Kiparsky. 1971. Fact. In: Danny Steinberg and Leon Jakobovits (eds.), *Semantics: An Interdisciplinary Reader*, 345–369. Cambridge: Cambridge University Press.
- Kratzer, Angelika. 1995. Stage-Level and Individual-Level Predicates. In: Greg N. Carlson and Francis J. Pelletier (eds.), *The Generic Book*, 125–175. Chicago: Chicago University Press.
- Krifka, Manfred, Francis J. Pelletier, Greg N. Carlson, Alice ter Meulen, Gennaro Chierchia and G. Link. 1995. Genericity: an introduction. In: Greg N. Carlson and Francis J. Pelletier (eds.), *The Generic Book*, 1–124. Chicago/London: University of Chicago Press.
- Koontz-Garboden, Andrew. 2007. States, changes of state, and the Monotonicity Hypothesis. PhD diss., Stanford University.
- Koontz-Garboden, Andrew. 2009. Anticausativization. *Natural Language and Linguistic Theory* 27: 77–138.
- Levin, Beth. 2009. Further explorations of the landscape of causation: comments on the paper by Alexiadou and Anagnostopoulou. In: *Proceedings of the Workshop on Greek Syntax and Semantics, MIT Working Papers in Linguistics* 49, 239–266, Department of Linguistics and Philosophy, MIT, Cambridge, MA.
- Levin, Beth, and Malka Rappaport Hovav. 1995. *Unaccusativity: At the Syntax-Lexical Semantics Interface*. (Linguistic Inquiry Monograph 26.) Cambridge, MA: MIT Press.
- Levinson, Stephen. 1993. *Pragmatics*. Cambridge: Cambridge University Press.
- Maienborn, Claudia. 2003. *Die logische Form von Kopula-Sätzen*. (studia grammatica 56.) Berlin: Akademie-Verlag.
- Maienborn, Claudia. 2008. Verb-Adjektiv-Konversion: Bildung und Interpretation resultativer Adjektivierungen. Handout for a talk held at a workshop on the occasion of the 80th birthday of Ilse Zimmermann, Zentrum für Allgemeine Sprachwissenschaft, Berlin.
- Maienborn, Claudia. 2009. Building event-based ad hoc properties: On the interpretation of adjectival passives. To appear in Arndt Rister and Torgrim Solstad (eds.), *Proceedings of Sinn und Bedeutung* 13.
- Marelj, Marijana. 2004. Middles and argument structure across languages. Phd. diss., Universiteit Utrecht.
- Mueller-Reichau, Olav. 2006. On the relevance of the kind-level/object-level distinction to referential semantics. Phd. diss., Universität Leipzig.
- Perlmutter, David M. 1978. Impersonal passives and the Unaccusative Hypothesis. *Proceedings of the 4th Annual Meeting of the Berkeley Linguistics Society*, 157–189.
- Pesetsky, David. 1995. *Zero Syntax*. Cambridge/Mass: MIT Press.

- Piñón, Christopher. 2001a. A finer look at the causative-inchoative alternation. In: Rachel Hastings, Brendan Jackson, and Zsófia Zvolenszky (eds.), *Proceedings of Semantics and Linguistic Theory 11*, 346–364. Ithaca, NY: CLC Publications, Cornell University.
- Piñón, Christopher. 2001b. Modelling the causative-inchoative alternation. *Linguistische Arbeitsberichte* 76: 273–293.
- Postal, Paul. 1972. A few factive facts. *Linguistic Inquiry* 3: 396–400.
- Ramchand, Gillian C. 2008. *Verb Meaning and the Lexicon: A First Phase Syntax*. Cambridge: Cambridge University Press.
- Rappaport Hovav, Malka and Beth Levin. 1998. Building verb meanings. In: Miriam Butt and Wilhelm Geuder (eds.), *The Projection of Arguments: Lexical and Compositional Factors*, 97–134. Stanford, CA: CSLI Publications.
- Roberts, Ian G. 1987. *The Representation of Implicit and Dethematized Subjects*. Dordrecht: Foris.
- Rothstein, Susan. 2004. *Structuring Events: A Study in the Semantics of Lexical Aspect*. Oxford: Blackwell.
- Sanz, Montserrat. 2000. *Events and Predication: A New Approach to Syntactic Processing in English and Spanish*. Amsterdam: John Benjamins.
- Schopp, Andrea. 1995. Pronominalisierung – Zur Erzeugung von Pronomen im Sprachproduktionsmodell SYNPHONICS. In: Soenke Ziesche (ed.), *Hamburger Arbeitspapiere zur Sprachproduktion VIII*, 53–85.
- Shieber, Stuart M. 1988. A uniform architecture for parsing and generation. In: *COLING 1988: Budapest, Hungary. Proceedings of the 12th International Conference on Computational Linguistics, 22–27 August 1988*, 614–619.
- Steinbach, Markus. 2002. *Middle Voice: A Comparative Study of the Syntax-Semantics Interface of German* (Linguistik Aktuell/Linguistics Today 50) Amsterdam: John Benjamins.
- Umbach, Carla. 2008. Facts as proof. Handout for a talk held at The Workshop on Abstract Objects, Barcelona.
- Umbach, Carla. 1998. Nonargument middles in Dutch. *Groninger Arbeiten zur Germanistischen Linguistik* 42: 109–128.