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Valence Creation and the German Applicative: the Inherent Semantics of Linking Patterns

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Abstract

We provide a unified account of semantic effects observable in attested examples of the German applicative ('*be-*') construction, e.g. *Rollstuhlfahrer Poul Schacksen aus Kopenhagen will den 1997 erschienenen Wegweiser Handiguide Europa fortführen und zusammen mit Movado Berlin* ***berollen*** ('Wheelchair user Poul Schacksen from Copenhagen wants to continue the guide 'Handiguide Europe', which came out in 1997, and roll Berlin together with Movado.'). We argue that these effects do not come from lexico-semantic operations on 'input' verbs, but are instead the products of a reconciliation procedure in which the meaning of the verb is integrated into the event-structure schema denoted by the applicative construction. We analyze the applicative pattern as an ARGUMENT-STRUCTURE CONSTRUCTION, in terms of Goldberg (1995). We contrast this approach with that of Brinkmann (1997), in which properties associated with the applicative pattern (e.g. omissibility of the theme argument, holistic interpretation of the goal argument, and planar construal of the location argument) are attributed to general semantico-pragmatic principles. We undermine the generality of the principles as stated, and assert that these properties are instead construction-particular. We further argue that the constructional account provides an elegant model of the valence-creation and valence-augmentation functions of the prefix. We describe the constructional semantics as prototype-based: diverse implications of *be*-predications, including iteration, transfer, affectedness, intensity and saturation, derive via regular patterns of semantic extension from the topological concept of COVERAGE.

1 INTRODUCTION

Compositional theories of sentence semantics have been centrally concerned with the relationship between the meanings of lexical items and the meanings of sentences that contain those lexical items. Verbal argument structure has been of great interest in recent theory building because of the transparent nature of the relationship between the verb's semantic requirements and the number and kind of thematic roles in the sentence. The majority of theories of verbal argument structure accord a central place to the concept of ALTERNATION, exploring the nature of the relationship between argument frames licensed by a given verb. The recognition that

argument-structure alternations are licensed by narrow semantic classes of verbs (Levin 1993; Gropen *et al.* 1989) has led to lexically based accounts of alternations, most of which posit minimally specified verbal valence structures along with general principles ('linking rules') governing the interface between verbal thematic structure and surface syntax.

While the general principles are typically based upon some version of Fillmore's (1968) semantic-role hierarchy, the greatest attention has been paid to those cases in which linkings to the core grammatical functions do not follow the predictions of the hierarchy. Mappings of this type are described by two general approaches. In the first approach, semantic (e.g. Aktionsart) representation is held constant, and the marked patterns are viewed as violations of mapping constraints (Foley & van Valin 1984). The existence of the marked patterns may be attributed to optimization elsewhere in the system, including the achievement of a match between a given thematic role and a given functional role (e.g. location and topic in Bresnan's 1994 analysis of locative inversion). In the second approach, the mapping constraints are assumed to be inviolable, while the lexico-semantic representations which provide inputs to those rules are manipulated through semantic operations on decomposed lexical structure (Gropen *et al.* 1989; Wunderlich 1997; Rappaport Hovav & Levin 1998).

Each model has been applied to the problem of the locative alternation. In the marked member of this alternation, a goal or location argument, which would otherwise receive oblique coding, receives the coding prototypically associated with the thematic role of patient (Foley & van Valin 1984; Dowty 1991; van Valin & La Polla 1997). This pattern, exemplified by the English sentence *She smeared the canvas with paint*, has been viewed as theoretically important because its interpretation, involving an attribution of 'affectedness' to the goal argument, suggests something noncompositional about the operation of the lexical rule. The lexical rule appears to be adding meaning. The facts of German, while superficially similar to those of English, force us to address an additional, more fundamental question: Is there a lexical rule at all?

At first glance, the locative alternation identified in English finds a straightforward parallel in German, with two obvious differences. First, the oblique-promoting device in German, like the applicative pattern in Bantu languages (Alsina & Mchombo 1990; Wunderlich 1991), involves morphological marking on the verb—in the case of German, the inseparable prefix *be*. Thus, for example, the applicative counterpart of the German verb *schmieren* ('smear') is *beschmieren*, as in *Sie beschmierte die Leinwand mit Farbe* ('She smeared the canvas with paint'). Second, the German applicative linking pattern combines with both intransitive and transitive verbs. That is, it accepts not only trivalent transitive verbs denoting transfer, e.g. *schmieren*,

but also bivalent intransitives denoting location or locomotion, e.g. *wandern* ('wander'). Accordingly, the verb *wandern* has the bivalent transitive counterpart *bewandern*, as in *Sie bewanderte den Schwarzwald* ('She wandered the Black Forest'). In both the trivalent and bivalent conditions, the location argument, which would otherwise receive oblique (preposition phrase) coding, is expressed by a direct grammatical function (a direct object when the voice is active). In the latter case, the applicative has a TRANSITIVIZING function. As a number of theorists (including Marcus *et al.* 1995 and Brinkmann 1997) have observed, the German applicative pattern is both productive and constrained: a great many verbs have applicative alternates and yet these verbs appear to cluster into relatively narrow semantic classes. In this regard, of course, the German applicative behaves much like its English analog, as described by Pinker (1989) and Levin (1993), *inter alia*. For example, causative verbs of position like English *lean* (or German *lehnen*) do not generally form acceptable applicative sentences, as in e.g. **She leaned the field with ladders.*

All of the foregoing observations are consistent with a model of the German applicative pattern in which a lexical rule mediates between two entries for a given verb. This general type of model works whether the alternating verbs are bivalent or trivalent and whether or not the two verb entries related by the rule are assumed to contain identical sets of semantic entailments. However, a more comprehensive look at the inventory of verbs which license the applicative pattern in German suggests that we need a different conception of the function of this pattern than that suggested by lexical-rule based approaches. This broader picture includes examples which cast doubt upon the general claim that the German applicative is a device for 'promoting' location arguments that would otherwise receive oblique coding. In certain of these examples, illustrated in (1), the 'input' lexical entry is (arguably) trivalent but does not license a goal argument:

(1) Message ID ⟨6lXJdRgaxSB@p-klink.link-dd.CL.sub.de⟩
[H]abe ich mich von meinen Kollegen [. . .] auch mal
Have I myself by my colleagues also occasionally
eifrig mit Kaffee **bekochen** lassen [. . .].
eagerly with coffee be-cooked let
'At times, I also let my colleagues busy themselves with making me coffee.'[1]

[1] Our data come from six different sources and are identifiable in the following ways. Examples taken from the on-line corpora at the *Institut für Deutsche Sprache* begin with a sequence of capital letters and numbers coding the specific corpus they are taken from (e.g. *WK* = Wendekorpus). Examples taken from the Deja news service on the worldwide web start out with the words *Message Id.* Data from the Lexis-Nexis research service start out with the name of the journal, newspaper, or magazine the quote is taken from (e.g. *Süddeutsche Zeitung*). Examples taken from the *Frankfurter*

In (1), *be*-prefixation has an effect similar to that of the English ditransitive pattern in allowing the linking of a BENEFICIARY argument to a core grammatical function (cf. *He made them coffee*). The base verb in (1), *kochen* ('cook'), does not license an oblique expression denoting a goal, as illustrated by the ill-formed permutation **Ich habe meine Kollegen Kaffee zu mir kochen lassen*, whose English translation is the equally ill formed **I had my colleagues make coffee to me.* Another problematic class of bivalent applicative verbs are those whose base verb is monovalent. This class is exemplified in (2) for the verb *schummeln* ('cheat'):

(2) Peter **beschummelte** mich beim Kartenspielen.
'Peter cheated me in cards.'

Unlike its ostensible English counterpart *cheat*, *schummeln* does not accept an oblique argument expressing the party deceived. The sentence **Er schummelte mir beim Kartenspielen* ('He cheated me [dative] in cards') is ill formed, as are the variants illustrated by **Er schummelte auf/zu/gegen mich beim Kartenspielen* ('He cheated on/to/against me in cards'). Therefore, the applicative verb *beschummeln* in (2) could not be said to code as a direct argument what would otherwise be coded as an oblique (preposition phrase or dative). Instead, the applicative pattern itself appears to license the 'malefactee' argument. This licensing effect is not limited to that of merely augmenting verbal valency. In our final class of cases, exemplified by (3), the input form lacks valency entirely; it is a noun rather than a verb:

(3) Message ID⟨19980909133745 00.JAA19465@ladder01.news.aol.com⟩.
Es mag ja lustig sein, zwei hartgekochte Eier wie Clownsköpfe mit angekeimten Sojabohnen zu **behaaren** und sie auf Gurkenscheiben zu stellen, ihnen mit zwei Tomatenstreifen Münder zu verpassen und Auglein aus Sojasprossen einzudrücken.
'OK, it might be funny to hair two hard-boiled eggs like clown's heads with germinating soy beans, to stand them up on cucumber slices, to give them mouths from tomato strips, and to impress soy shoots on them as little eyes.'

In (3), a trivalent applicative predication, the base form is the noun *Haar* ('hair'). This word is inherently nonrelational, and has no verbal counterpart

Rundschau Korpus are marked by a single number. Examples collected from websites are given in the standard URL format. Examples that were provided by native-speaker consultants carry no marking. We include a narrow gloss in example (1) in order to demonstrate both the internal structure of the verb and its transitivity. We will provide only broad glosses hereafter, although for sentences containing applicative verbs we have attempted to construct glosses which reflect as accurately as possible both the form class of the stem to which the prefix *be-* attaches and the transitivity of the resulting combination.

outside of the applicative construction; there is no transfer verb **haaren* ('hair').[2] The applicative predication in (3) denotes a transfer event of the type denoted by trivalent applicative verbs like *laden* ('load'), and yet the transfer implication cannot be attributed to the semantics of the base form, which in this case is not a verb, let alone a transfer verb. In all of the examples (1)–(3), the appropriate inputs are simply lacking. These examples therefore suggest that the lexical-rule based model of the applicative pattern is inadequate.

These examples also disturb the neat picture of constrained productivity presented above. They suggest that the applicative pattern is not as selective about its inputs as previous analyses have implied, as it combines with verbs that do not denote either transfer or location. This fact makes it more difficult to describe the use conditions upon the applicative. One could claim that the tokens in (1)–(3) are idiomatic or marginal uses which do not bear upon the function of the applicative. However, the denominal applicative exemplified in (3) is novel, and in fact many of the novel tokens used to illustrate the productivity of the German applicative involve verbs which do not have base forms denoting transfer, locomotion or location (see Günther 1974 for an extensive listing of such examples). Brinkmann (1997: 11), for example, cites as evidence of the productivity of *be*-prefixation relatively unconventional attested tokens, including *bedudeln* (roughly, 'drone someone'), whose base form is the intransitive verb *dudeln* ('play tunelessly'). These novel examples of *be*-prefixation have little relevance for the productivity of the locative alternation, since they do not illustrate it. If we assume that the productivity of a form is evidence of a specific function, and that the function of the applicative pattern cannot be 'locative promotion', then we face the challenge of discovering what function of *be*-prefixation accounts for denominal examples like (3) and the examples typically used to illustrate the locative alternation.

Even were we to broaden the function of the applicative to that of promoting *any* argument otherwise expressible as a preposition phrase (and not merely a locative argument), we would encounter difficulty. This more general version of the oblique-promotion analysis appears at first to be valid: certain bivalent *be*-verbs which do not qualify as verbs of location nevertheless have bivalent intransitive counterparts which license a

[2] One reviewer has commented that (3) is problematic as an example of an applicative predication denoting transfer: the type denoted by the nominal *Haar* ('hair') is not literally the theme of the transfer event, since bean sprouts are not hair. We do not find this objection compelling, since it is meaning relative to a metaphorical schema and not 'literal' meaning that is at stake here. In the image mapping which the reader is asked to perform, food items map to parts of the human head, and while this mapping is in force, one can truthfully refer to the bean sprouts as hair. To believe otherwise would be to subscribe to the notion that metaphor is inherent falsity—a notion that Lakoff (1987) and others have refuted.

prepositional phrase. Brinkmann (1997: 84–5) points to several verb classes in which such alternations can be found, including verbs of active perception, verbs of speech, and verbs of emotional expression. Pairs exemplifying alternations in each class are, respectively, *riechen an/beriechen* 'sniff [e.g. a flower]/sniff thoroughly'; *sprechen über/besprechen* 'talk about/discuss'; and *weinen um/beweinen* 'cry about/mourn [e.g. a death]'. However, the broader alternation-based model would not, for example, extend to bivalent applicative verbs with monovalent base forms (e.g. *bedudeln*). The latter class of verbs includes not only *beschummeln* in (2) but also applicatives formed from other verbs of deception, including *mogeln* ('cheat'), *schwindeln* ('fib'), *flunkern* ('lie') and *lügen* ('lie'). Moreover, the more general model of the applicative alternation does not encompass applicative verbs which lack verbal base forms entirely, e.g. the denominal verb *behaaren* in (3). Thus, even a very broad conception of the 'promotion' function of the applicative is too narrow.

If we abandon the idea that the applicative pattern is an argument-promotion device, we must then ask whether it is used to achieve semantico-pragmatic effects that are not derivative of the promotion function. It would be a challenge to isolate and describe such effects, if they exist. The examples given thus far demonstrate that the range of meanings associated with *be*-prefixed verbs is large, and includes implications related to location, transfer, and malefaction/benefaction. Do these meanings have anything in common? Ironically, the very characteristic of *be*-prefixation which makes it worthy of an in-depth synchronic study—its high type frequency—also appears to point toward a bleached rather than rich semantics (Eroms 1980). The number of *be*-prefixed verbs is considerable: there are several hundred tokens listed by Günther (1974). When a common semantic denominator is recognized, it is generally highly schematic, and not obviously attributable to the presence of the prefix. Wunderlich (1987), for example, proposes that *be*-predications express 'topological local proximity'. Others have proposed a general implication of 'affectedness' of the object-denotatum (Filip 1994). Both of these analyses seem plausible, and yet the implications in question can also be analysed simply as properties of the semantic prototype associated with transitive predications (Hopper & Thompson 1980; Hopper 1985).

Accordingly, we reject the idea that there is a single abstract meaning associated with the applicative pattern. Instead, we propose to capture the commonalities among usages of the *be*-pattern through an associative network based on a single semantic schema (Goldberg 1995; Lakoff 1987). This schema is one in which a THEME physically covers a LOCATION (either over the course of time or at a given point in time). We will propose that this schema is the basis for certain metaphorical extensions. The

relationship between the schema and these metaphorical extensions will be represented by links denoting metaphorical mappings (Goldberg 1995; Lakoff 1987). These links include the following independently motivated metaphorical mappings (Reddy 1979; Lakoff & Johnson 1980; Sweetser 1990; Goldberg 1995): DISCOURSE IS TRAVEL OVER AN AREA, PERCEIVING IS COVERING OBJECTS WITH ONE'S GAZE, THE CONDUIT METAPHOR, EFFECTS ARE TRANSFERRED OBJECTS. We further propose that, through a mode of grammaticalization called PRAGMATIC STRENGTHENING (Hopper & Traugott 1993; König & Traugott 1988), the applicative pattern has also come to express TRANSFER, ITERATED ACTION, INTENSIFICATION of the action or state denoted by the verb, and EFFECTS achieved by means of an action. These inference-based extensions conventionalize prototypical components of applicative semantics, while canceling entailments related to coverage. An analysis of this type will allow us to provide a specific semantic analysis for the applicative pattern while acknowledging that a given pair of applicative predications may have few semantic commonalities.

In our proposal, the semantic features shared by applicative verbs are contributed by the argument-structure pattern with which those verbs combine. This proposal counters an analytic trend. While proponents of lexical-rule based approaches appear to agree that semantic constraints determine whether a linking rule can APPLY, most appear unwilling to embrace the idea that a linking rule can CONTRIBUTE conceptual content not found in the input verb. Thus, Gropen *et al.* (1991) and Pinker (1989) argue that the 'affectedness' implication associated with oblique-promoting patterns is a general implication of direct-object coding rather than a meaning component contributed by the linking rule (see also Rice 1989; Rappaport & Levin 1988; Tenny 1987). This position makes sense against the backdrop of an alternation-based model, in which linking rules neither create nor destroy any aspect of thematic structure. The effect of a linking rule is thereby limited to that of altering the expression of participant roles. Since the examples in (1)–(3) call into question the principle of conservation of thematic structure, they also call into question its corollary—the proposition that linking rules do not contribute meaning to sentences.

We will argue that the meanings of examples like (1)–(3) are products of a reconciliation procedure in which the meaning of the verb is brought into conformity with the meaning of the applicative pattern. On this model, the *be*-prefix is a morphological feature of the applicative pattern, rather than a device for deriving new verbs or verb entries. The applicative pattern is an ARGUMENT-STRUCTURE CONSTRUCTION, in the sense of Goldberg (1995). Such constructions are linking templates which denote basic-level event types (like transfer and caused motion). As Saussurean signs, these pairings are highly similar to verbs. Both verbs and argument-structure constructions

have (a) thematic and Aktionsart structure, (b) meanings which may be extended metaphorically, and (c) idiosyncratic use constraints. The conception of grammar as a hierarchically organized inventory of form-meaning pairs (with greater and lesser degrees of internal complexity) is central to CONSTRUCTION GRAMMAR (CG) (Zwicky 1994; Kay & Fillmore 1999; Goldberg 1995; Michaelis 1994; Michaelis & Lambrecht 1996; Jackendoff 1997b). We will argue that widely identified interpretive properties of the German applicative pattern are idiomatic properties of the applicative construction, and that attempts to attribute these properties to general semantico-pragmatic principles have failed.

In the CG model of argument structure as proposed by Goldberg, the semantic effects observable in (1)–(3) do not result from 'derivations' in which a restricted set of 'input verbs' undergoes modification of semantics and syntax, whether in the lexicon or elsewhere. In the CG model, verbs do not have alternate semantic representations. Instead, verb meaning is constant across syntactic contexts. No additional lexical entry is created to represent the meaning and valency of verbs found in specialized patterns like the ditransitive. Verbs unify with verb-level linking constructions which denote event types. These linking constructions assign grammatical functions to participant roles contributed by the verb. In addition, since these constructions denote event types, each licenses the theta frame entailed by its particular event type. This set of thematic roles may PROPERLY INCLUDE the set of roles licensed by the verb. In such cases, verbs which combine with the construction undergo modulation of their theta frames. In the case of the applicative pattern in particular, as we will show, the construction not only AUGMENTS verbal valency but CREATES valence patterns for open-class items which are not inherently relational. We will argue that the function of valence building cannot be revealingly modeled by lexical-rule accounts, while this function is predicted by the constructional model.

This paper will be structured in the following way. In section 2, we will discuss a recent account of the function of *be*-prefixation, presented by Brinkmann (1997) as part of an acquisition study of the locative alternation in German. Although the locative alternation has been widely described, we chose to react to Brinkmann's account because it is comprehensive in its attention to previous literature, provides a clear and well articulated example of the derivational approach to argument structure, and represents a strong challenge to the view advanced here—that the semantic effects observable in (1)–(3) are attributable to a specific formal pattern rather than to more general principles of interpretation. In section 3, we will more fully motivate the construction-based approach to argument structure and discuss the advantages that this approach offers for the analysis of the

applicative pattern. In section 4, we will discuss the semantic schema associated with the applicative pattern, and its metaphorical and pragmatic extensions. Section 5 contains concluding remarks.

2 AN ALTERNATION-BASED ACCOUNT OF THE APPLICATIVE PATTERN

2.1 *Overview of Brinkmann (1997)*

Brinkmann's account is based on Wunderlich's (1987, 1991, 1997) LEXICAL DECOMPOSITION GRAMMAR. In this model, inseparable-prefix verbs that take locations as direct objects are lexically derived from their unprefixed base verbs through FUNCTIONAL COMPOSITION of a verbal predicate and a prepositional predicate. Semantico-pragmatic implications of the applicative pattern are attributed to general interpretive principles or to the semantics of the prepositional predicate rather than to semantic effects contributed by the linking rule itself. In the following section (2.2), we will argue that the preposition-incorporation model does not provide a principled account of the valence-building function of the applicative pattern, and thereby fails to capture a major source of its productivity. In section 2.3, we will challenge Brinkmann's claim that certain widely noted properties of applicative predications can be accounted for straightforwardly by reference to general interpretive principles and etymology. We will focus on three such properties: the holistic interpretation of the goal argument, the omissibility of the theme argument, and the interpretation of the goal argument as a two-dimensional region. For each of these three features, we will show that Brinkmann's putatively general account cannot in fact be interpreted coherently *without* reference to semantic properties associated directly with the applicative linking pattern.

2.2 *Representing valence augmentation and creation*

It stands to reason that a derivational account of argument structure, in which a lexical process changes the position in decompositional structure of argument roles, should require that the relevant argument roles be present in the input representation. However, as mentioned in section 1, there are applicative verbs which manifestly violate this requirement. These verbs fall into two broad classes: denominal and deadjectival *be*-verbs, on the one hand, and adjunct-promoting and valence-augmenting deverbal *be*-verbs on the other. We will discuss each of these two classes in turn, pointing to

the additional layers of abstract representation which the Wunderlich–Brinkmann model requires for each class.

One may be tempted to extend the functional-composition account of deverbal *be*-verbs to denominal and deadjectival *be*-verbs by assuming that a conversion mechanism derives simple verbs from the base adjectives and nouns before the regular preposition-incorporation mechanism applies. Even if we accept the necessity of rule ordering, such an account lacks sufficient empirical support. First, there may be no simple verb that could be analyzed as the result of noun-verb or adjective-verb conversion. Second, even when there is a homophonous candidate verb, it may not have the appropriate meaning. Consider, for example, the verb *beschildern* 'put up traffic signs' in (4). It can be paraphrased accurately only by the predicate *aufstellen* 'put up', taking the nominal argument *Schilder* 'traffic signs'. A simple verb *schildern* exists, but its meaning is 'describe', not 'put up traffic signs':

(4) Message ID ⟨4lq28k$lsr@nz12.rz.uni-karlsruhe.de⟩
Also *m.E.* regelt 41, wie ein Radweg zu **beschildern** ist [. . .].
'Well, *in my opinion* [paragraph] 41 regulates how a bike path needs to be equipped with traffic signs.'

Similarly, the verb *befreien* in (5) can be paraphrased only by the resultative construction *frei bekommen* 'get free, released'. The simple verb *freien* means 'to woo' rather than 'to free, liberate':

(5) Die Polizei **befreite** die Geiseln.
'The police freed the hostages'.

The lexical decomposition account seeks to deal with applicative examples like (4)–(5) by making two crucial stipulations. First, it allows for phonologically empty morphemes. In the case of denominals, empty verbs with appropriate meanings, such as 'put', simultaneously host preposition- and noun-incorporation processes.[3] In the case of deadjectivals, a phonetically unrealized causative morpheme (CAUSE) and an unrealized inchoative morpheme (BECOME) combine with the appropriate adjectival predicates to derive the necessary input representation. Second, the input representations of deadjectival and denominal verbs are prohibited via stipulation from being lexicalized. One can take issue with this approach on three counts. First, it is ad hoc. Second, it captures the facts only by complicating the syntax-semantics interface. Third, it does not explain what *be*-prefixation contributes to the formation of deadjectival *be*-verbs, since

[3] This is the Wunderlich (1987) account. It is not entirely clear from the paper, but Wunderlich (1997) may further decompose verbs like PUT into CAUSE (BECOME (LOCATED)).

the semantic representations of these verbs do not contain stative locative predicates.

The incorporation account is problematic even for *be*-verbs whose meanings appear to be compositional, in the sense of having semantically aligned base verbs. Some of these *be*-verbs license arguments that do not belong to the subcategorization frame of the base verb. For example, the verb *wachsen* 'grow' does not subcategorize for a location argument. By contrast, its applicative counterpart *bewachsen* does require a location argument, as shown in (6):

(6) Message ID ⟨35fa4ec9.0@netnews.web.de⟩
SELBSTKLIMMER = Kletterpflanzen, die mit speziellen Haftorganen Wände oder andere Flächen direkt **bewachsen** [. . .].
'Self-climbers = climbing plants that directly grow walls or other surfaces with the help of special adhesive/sticky extremities.'

Wunderlich (1991: 614) concedes that '[t]o describe this [phenomenon] by functional application, we have to assume that the modifier[4] turns into an argument first, and then this argument is incorporated.' In other words, it is necessary to stipulate an additional operation and to order it before the derivation of the *be*-verb. While this move may be undesirable only for reasons of parsimony, there is another class of *be*-verbs for which the Wunderlich account appears descriptively inadequate. These are *be*-verbs whose unprefixed counterparts actually *disallow*, whether as argument or adjunct, the expression of the 'location' role licensed by the *be*-verb. For example, consider the contrast between *mogeln* 'cheat, swindle' and *bemogeln*, shown in (7)–(8), respectively:

(7) Peter hat (*mir) beim Kartenspielen **gemogelt**.
'Peter cheated (*me) in cards.'
(8) Peter hat mich beim Kartenspielen **bemogelt**.
'Peter cheated me in cards.'

While it is true that at the level of conceptual structure we may assume the existence of a victim of Peter's cheating in (7), this is irrelevant to the derivation of the *be*-form. According to Wunderlich, argument shifting by morphological operation is only possible at the level of semantic form or at the level of thematic structure (Wunderlich 1997: 52–3). At both of these levels, the location argument of *mogeln* would be absent. Moreover, there are deverbal *be*-verbs which license arguments that do not even belong to the conceptual structure of the unprefixed base verb. Consider, for example, *beregnen* 'spray with water':

[4] 'Modifier' is Wunderlich's term for an optional verbal argument.

(9) Message ID ⟨6xulta5r4nB@link-m54.link-m.de⟩
Damals wäre um ein Haar ein Flüssiggastank in Mitleidenschaft gezogen worden [. . .] die Petershausner Feuerwehr mußte diesen daher intensiv **beregnen**.
'Back then a tank full of liquid gas almost got damaged. The Petershausen fire department had to make a great effort to douse it.'

The theta frame licensed by the unprefixed verb *regnen* 'rain' does not include an agent or cause of the precipitation, as shown in (10)–(11):

(10) *Peter **regnete** die Blumen mit der Gießkanne.
'Peter rained the flowers with the watering-can.'
(11) *Das Gewitter **regnete** drei Tage lang.
'The thunderstorm rained for three days.'

Thus, we find a multitude of cases (including apparently straightforward cases) in which the input needed by the preposition-incorporation model is unavailable. This suggests strongly that applicative semantics does not arise from operations on verbs, but instead from the imposition of a particular argument-linking pattern on a wide range of input lexical items.

2.3 *Interpretative principles*

Applicative predications appear to have several idiosyncratic semantico-pragmatic properties. First, the goal or location argument is generally interpreted as being affected in a holistic manner by the action which the verb denotes (HOLISM). Second, the theme arguments in transfer predications can always be omitted (NULL COMPLEMENTATION). Third, the goal argument is always interpreted as a planar region rather than, say, a three-dimensional space (EXTERIORITY). According to Brinkmann, these properties are not truly idiosyncratic. She argues that the first two are instead epiphenomena of more general syntactic and pragmatic principles and that the third follows from the meaning of the prefix *be-*, which she analyzes as a bound preposition meaning 'on, at'. In the next three subsections, we will give evidence against Brinkmann's analyses.

2.3.1 Holism

The goal argument of a *be*-verb is construed as wholly affected by the action that the *be*-verb denotes. For instance, the sentence *Die Kinder bemalten den Tisch* 'The children be-painted/be-drew the table' evokes a scene in which there are drawings all over the table. This semantic

characteristic of *be*-verbs is not specific to the German locative alternation: in the English sentence *John painted the table* it is similarly inferred that John painted the entire table surface. Accordingly, Pinker (1989) speculates that direct-object encoding of the location argument universally serves to encode affectedness of the location and that this function makes the alternation learnable. However, Brinkmann shows convincingly that the affectedness implication is not common to all German *be*-predications. She points out, for instance, that it is not clear in what way the cake undergoes a change of state in (12):

(12) Donna **bestreut** den Kuchen mit Zucker.
'Donna sprinkles the cake with sugar.' (= Brinkmann (53a): 71)

On the basis of such observations, Brinkmann concludes that affectedness understood as change of state cannot be a defining characteristic of German *be*-predications. What is it, then, that gives rise to speakers' intuitions of holism concerning *be*-predications? Brinkmann argues that it is Löbner's (1990) PRESUPPOSITION OF INDIVISIBILITY.[5] Löbner's definition of the presupposition runs as follows: 'Whenever a predicate is applied to one of its arguments, it is true or false of the argument as a whole' (our translation). Applied to (12), the principle predicts that sprinkling with sugar must be true for all parts of the surface of the cake, since *den Kuchen* is the direct object of the verb *bestreuen* 'strew'. Nothing needs to be said about the final effect of the denoted event upon the cake.

However, as Löbner observes, the indivisibility presupposition cannot be a general constraint on predication, if it does not also hold for sentences like *Harry boxte Moe* 'Harry punched Moe'. Under our current formulation of the Löbner model it is not clear what the right subregions of Moe would be. To account for these cases, Löbner suggests that we refine our understanding of possible partitionings of an argument. The refinement involves positing two groups of predicates. On the one hand, there are SUMMATIVE predicates. A summative predicate applies to an argument if it also applies to each of the argument's parts.[6] To take Löbner's example, the sentence *The children are playing* could denote a situation in which each child is playing his or her own game, a situation in which groups of children play together, or a situation in which all children engage in a single game. On the other hand, there are INTEGRATIVE predicates. Unlike summative predicates, these do not apply to arbitrarily chosen parts of the argument;

[5] Brinkmann (1997) uses the term *indivisibility* to refer to what Löbner calls *holism*. We adopt the newer terminology.

[6] 'Ein Prädikat P mit einem Anwendungsbereich, in dem eine Teil-von-Relation definiert ist, ist genau dann summativ, wenn für alle i aus seiner Domäne und für alle zulässigen Aufteilungen A von i gilt: P(i) = 1 gdw. [genau dann, wenn; JR&LAM] P(i′) = 1 für alle i′ aus A′ (Löbner 1990: 25).

in many cases they do not apply to any parts at all.[7] There is only one admissible partition of the argument, the zero-partition: the argument must always be viewed as an undivided whole. Now, based on the observation that the sentence *The children are playing*, which has a summative reading, also has a zero-partition reading under which all children engage in a single game, it is argued that integrative predicates are really just the limiting case of summative predicates. Understood in this way, integrative predicates fall under the indivisibility presupposition.

If we assume, however, that all verbs fall into one of two classes of 'indivisible' verbs, we lack an explanation for the fact that the vast majority of *be*-verbs have summative readings with respect to their location arguments, even though they would also comply with the indivisibility presupposition if they had integrative readings. For instance, predications containing the verb *beladen* 'load' are summative: each part of, say, a truckbed must have a load on it. Yet there is no principled reason to presume that predications containing transfer verbs like *beladen* would not be integrative. Why couldn't putting anything anywhere on the back of a truck be an event that we could refer to by means of the verb *beladen*, since punching a person anywhere is punching that person? As Löbner himself points out, one cannot determine whether a predicate is summative or integrative by looking only at an argument: a person could be viewed holistically as the object of *punch* or as being composed of parts and regions as the object of *bespritzen* 'besplash'. Given that the semantics of the goal argument do not favor one kind of reading over the other, and given that both summative and integrative predications in principle comply with the indivisibility presupposition, we conclude that the applicative pattern itself must be what gives rise to the summative readings of *be*-verbs.

2.3.2 Theme omissibility

When a *be*-verb denotes a transfer scenario with an agent, theme, and goal, the theme can be omitted in surface syntax, when its referent is recoverable from context, as in (13):

(13) Die Jugendlichen **besprühten** die Wand (mit Farbe).
'The youths sprayed the wall (with paint).'

Brinkmann argues that this fact is predicted by what she calls the NONINDIVIDUATION HYPOTHESIS. A theme is said to be nonindividuated if it is an unbounded mass or plexity, and is thereby not INCREMENTAL, in the

[7] 'Integrative Prädikationen übertragen sich nicht von dem Argument auf beliebige Teile davon, in vielen Fällen sogar auf überhaupt keine echten Teile' (Löbner 1990: 25).

sense of Dowty (1991). When an entity is an incremental theme, each part of that entity is mapped to a temporal subpart of an event. The theme argument in (13), and other goal-object sentences, is nonincremental, i.e. nonindividuated. Properties of the theme argument do not determine the endpoint of the event described, since it is wall space and not paint whose gradual exhaustion defines the time course of the spraying event in (13). Brinkmann provides a general motivation for the nonindividuation of the theme argument in examples like (13) by assuming that such predications denote processes. Accomplishment verbs, like *sing*, which otherwise select for an incremental theme, yield processual (activity) readings when their theme arguments are deindividuated, as in *I sang songs*. By the same token, she argues, the applicative pattern renders the theme's quantificational properties irrelevant by yielding a processual reading of verbs like *laden*, which would not otherwise denote processes (p. 120). Examples of null-object complementation, e.g. *I read* or *She smoked*, are given as support for the idea that 'there is a close relationship between an incremental theme's omission from object position and its construal as nonindividuated' (p. 115).

We concur with Brinkmann that nonspecific oblique themes of goal-object constructions are nonincremental. We will, however, call into question two assumptions which she makes in her explanation of the nonindividuation hypothesis. The first assumption is that the omissibility of the theme is determined by semantics alone. The second assumption is that nonindividuation of the theme—and thereby its omissibility—comes about because applicative verbs denote processes. Let us now look at the way in which these two assumptions are expressed. Brinkmann states the non-individuation hypothesis as follows:

(14) The direct object of a transitive locative verb may be omitted only when the quantificational properties of the corresponding argument are irrelevant; the argument may then be existentially bound. (Brinkmann 1997: 113)

By 'direct object of a transitive locative verb' in (14) we assume that Brinkmann intends that argument which *would be* the direct object of a transitive *transfer* verb if this verb were not subject to the applicative linking. That is, Brinkmann is referring to the theme argument. Examples like (15) show that (14) cannot be a sufficient condition upon omission of the theme argument. One cannot, for example, omit the theme object of a locative verb when the goal argument is linked to an oblique grammatical function.

(15) *Peter lud auf den Wagen.
'Peter loaded [something] onto the wagon.'

Thus, the literal interpretation of the nonindividuation hypothesis generates an incorrect prediction for unprefixed transfer verbs. As we have seen, Brinkmann treats oblique status and omission as two mechanisms for nonsyntactic expression. However, it appears that oblique status and omissibility are not the same thing. Instead, omissibility of the theme appears to be dependent upon oblique status, and capturing this fact requires that one refer to a particular linking. There is nothing in lexical decompositional grammar which would obviously allow one to do so, yet Brinkmann's formulation of the hypothesis does just that by referring to *direct object,* a grammatical function, and *quantificational properties*, a semantic notion.

Further, the deindividuation (and thereby omissibility) of the theme cannot plausibly be attributed to a processual reading of the verb. We concur with Brinkmann that accomplishment verbs like *beladen* entail preparatory processes. Since, however, nonapplicative transfer verbs like *laden* are accomplishment verbs as well, they should entail the very same process predicates. What then is the aspectual, basis for distinguishing applicative and nonapplicative transfer verbs? Further, as Herweg (1991) demonstrates, entailing a process and being a process are two different things. If this were not so, he argues, accomplishment predications would share with activity predications the entailment pattern which he refers to as the DISTRIBUTIVITY PROPERTY (i.e. the subinterval property as per Bennett & Partee 1978). Accomplishment predicates demonstrably lack the distributivity property.

In sum, we have seen that the quantificational properties of the theme argument do not provide a sufficient condition for the omission of that argument and that the omission of the theme argument in trivalent applicatives cannot plausibly be attributed to a processual interpretation. Insofar as this is the case, omissibility of the theme argument appears to come from a particular linking (to an oblique grammatical function), and not from interpretative principles.

2.3.3 Exteriority

The only semantic fact about *be*-verbs which Brinkmann attributes directly to the prefix *be-* is the restriction that the goal location must denote the exterior of an object (pp. 81–2). This constraint is illustrated by the ill-formedness of (16′) when intended as a paraphrase of (23). The only acceptable interpretation for example (16) is that the seeds are thrown at the outside of the garbage can rather than inside it:

(16) Message ID ⟨667boLdWeWB@p-ej.link-h.comlink.apc.org#1/1⟩
Bin auch für Kernkraft! Überlegt einmal, wieviel Kerne wir täglich in den Mülleimer **werfen**, ausspucken oder verschlucken, ohne ihre Kraft zu nutzen.
'I am for nuclear power, too! Just think how many seeds (lit. nuclei) we throw into the garbage can, spit out or swallow every day without using their power.'

(16′) Bin auch für Kernkraft! Überlegt einmal, mit wievielen Kernen wir täglich den Mülleimer **bewerfen**, wieviele wir ausspucken oder verschlucken, ohne ihre Kraft zu nutzen.
'I am for nuclear power, too! Just think with how many seeds a day we throw the garbage can, how many we spit out or swallow without using their power.'

Be-, like other inseparable prefixes of German, lacks a corresponding free form that can be used as a preposition or particle. As Brinkmann points out, *be-*'s closest living relative is the preposition *bei*, which is related to English *by* and has a meaning of 'by, close, near, at'. In none of its uses does *bei* involve contact between a theme and a landmark. Therefore, *be-*verbs cannot be formed—synchronically at least—by incorporating *bei*. Brinkmann observes, however, that *be-*verbs can be used to paraphrase unprefixed verbs with goal complements that are encoded either by *auf* 'on [a horizontal surface]' as shown in (17), or by *an* 'on [a vertical surface]', as shown in (18). Both of these prepositions have the needed meaning element 'contact with a surface'.

(17) Ted **schmierte** Butter auf die Tischdecke.
'Ted smeared Butter onto the tablecloth.'

(17′) Ted **beschmierte** die Tischdecke mit Butter.
'Ted smeared the tablecloth with butter.'

(18) Petra **hängte** Sterne an den Christbaum.
'Petra hung stars onto the Christmas tree.'

(18′) Petra **behängte** den Christbaum mit Sternen.
'Petra hung the Christmas tree with stars.'

Accordingly, Brinkmann postulates a preposition *be* with the same predicate-argument structure as the prepositions *an* and *auf* 'on, onto' The only difference among these prepositions is that *be* is a bound morpheme which occurs only as a prefix. This analysis is historically plausible, and coheres with the assumptions of the preposition-incorporation account, but its attractiveness is diminished by its idiomaticity—a particular lexical entry is created solely for the purpose of preserving a compositional account.

But even if we ignore the issue of idiomaticity and assess at face value Brinkmann's model of *be-* as a bound version of *an* or *auf*, we face difficulties. For if the meaning of the bound preposition *be-* corresponds to that of the prepositions *an* and *auf*, why then are *be*-verbs not synonymous with *an-* or *auf*-verbs derived from the same base? Consider the following pair of sentences. While the *be*-sentence in (19) implies coverage of a large portion of the tablecloth, the sentence in (20), containing the separable prefix *an-*, does not.

(19) Ted **beschmierte** die Tischdecke mit Butter. (= (17′))
(20) Ted **schmierte** die Tischdecke mit Butter an.

If one assumes with Brinkmann that both verbs are formed by the same process of preposition incorporation, that the prepositions involved are closely aligned semantically, and that syntactic principles such as indivisibility hold, then one would predict that (20) means the same thing as (21), or at least that the two sentences do not differ in ways that are controlled by grammatical principles. Yet this is exactly what we find: only the applicative sentence in (19) has the expected holistic reading.

This latest finding should come as no surprise. We have seen on several occasions that if one grants each of the premises of Brinkmann's analysis, the resulting account still does not explain all of the facts. The indivisibility principle, for instance, by its very generality fails to predict that *be*-verbs have summative readings rather than integrative readings. Similarly, the preposition-incorporation model fails to extend to *be*-verbs like *beregnen*, in which the 'output' arguments are not present in the 'input' representation. These facts suggest strongly that the semantic and syntactic features of *be*-predications do not come from general operations and principles, but rather from a specific formal pattern to which specific semantic constraints are attached. In the next section, we will describe a syntactic theory which accords a central place to such patterns.

3 THE CONSTRUCTIONAL APPROACH TO THE GERMAN APPLICATIVE

What would it mean to adopt a constructional rather than a lexical model of the *be*-pattern? We will address this question in steps. section 3.1 will describe the nature of the challenge that Construction Grammar has offered to the principle of lexical licensing, discuss the constructional model of argument structure and set forth the constructional account of the German applicative pattern. This account rests on the assumption that the

valency of verb and construction may differ. In sections 3.2–3.6, we will apply the constructional model to five features of the applicative pattern that proved troublesome for the Brinkmann account. In section 3.7, we will address two interrelated questions: to what extent does the constructional model adhere to Jackendoff's (1983) Grammatical Constraint and to what extent can it be described as compositional? Finally, in section 3.8, we will discuss the formal representation of applicative sentences within Construction Grammar.

3.1 *Theory overview*

The principle of lexical licensing holds that the basic scene denoted by a sentence (the set of participant roles expressed) derives from the argument structure of the head verb. Thus, for example, it appears clear that a sentence like *We gave the account to her* denotes a scene of transfer involving an agent, a theme and a goal because the semantic frame associated with the head verb *give* denotes a scene of transfer, and likewise requires the presence of these three participants. This principle is intrinsic to a compositional theory of semantics—a theory which has been seen as central to any account of syntax-semantics isomorphism, including that of Jackendoff, who states (1990: 9): 'It is widely assumed, and I will take for granted, that the basic units out of which a sentential concept is constructed are the concepts expressed by the words in the sentence, that is, lexical concepts.' A more recent version of this principle is stated by Jackendoff as the principle of syntactically transparent composition: 'All elements of content in the meaning of a sentence are found in the lexical conceptual structures of the lexical items composing the sentence' (1997a: 48).

The lexical-licensing principle has been central to the description of argument structure in most formal theories. Many such theories (e.g. Lexical Functional Grammar as described by Bresnan 1994 and Role and Reference Grammar as described by van Valin & LaPolla 1997) posit universal linking rules, which capture generalizations concerning the syntactic realization of thematic roles assigned by verbs or verb classes (e.g. the class of transfer verbs). Such theories are driven by the assumption that 'argument roles are lexically underspecified for the possible surface syntactic functions they can assume' (Bresnan 1994: 91). Universal linking rules map these argument roles to grammatical and pragmatic functions, and these rules do not add to, subtract from or alter the array of thematic roles associated with the verb. For example, in Bresnan (1994), locative inversion in English and Chichewa is represented as one linking possibility for verbs of location like *stand*, which subcategorize for locative and theme

arguments. Such verbs are subject both to the linking rule which produces the configuration in (21) and to the linking rule which produces the configuration in (22):

(21) Two women stood in the plaza.
(22) In the plaza stood two women.

Examples of locative inversion like (23) are, however, problematic in Bresnan's framework:

(23) Through the window on the second story was shooting a sniper.

Sentence (23) is problematic because the verb *shoot* assigns neither a locative role or a theme role, and yet can appear in the locative-inversion configuration. In such examples, Bresnan argues, a locative-theme argument structure imposed by the pragmatic requirement of presentational focus is superimposed on the argument structure associated with the unergative verb *shoot*. The agent role of *shoot* will consequently be identified with the 'overlay theme' (p. 91). The problem with this type of account is simply that it is not explicit. If argument structures are products of the linkings licensed by given verbs, and not independent form-meaning pairings, it is difficult to understand the source of the 'overlay theme'.

Adherence to the lexical-licensing principle results not only in ad hoc devices like the 'overlay theme' invoked by Bresnan (1994) in cases like (23), but also, as Goldberg points out (1995: 9ff), appeal to implausible verb senses. Goldberg discusses examples like the following:

(24) Most likely they were fellow visitors, just panting up to the sky-high altar out of curiosity. (Lindsey Davis, *Last Act in Palmyra*, p. 28)
(25) As they had waved us along the raised causeway and into the rocky cleft [. . .]. (op. cit., p. 31)
(26) They can't just analyze away our data.

Goldberg points out that on the assumption that argument structure is determined exclusively by head verbs, we would need to posit a new verb sense for each of the usages exemplified in (31)–(33). Sentence (24) would require a special sense of *pant* equivalent to the formulation 'move while panting'; sentence (25) would require a special sense of the verb *wave* whose definition would be 'signal permission to move to a place by waving'; and, finally, sentence (26) would require one to view *analyze* as a verb which denotes (metaphorical) caused motion. Such word senses, as Goldberg points out are not only ad hoc and unintuitive, but also compatible only with an assumption of radical and unconstrained polysemy. Crucially, as Goldberg and Fauconnier & Turner (1996) have demonstrated, examples like (24)–(26) cannot easily be viewed as marginal or special cases. Sentence

(24), for example, exemplifies a lexicalization pattern—conflation of manner and motion—which Talmy (1985) and Slobin (1997) have shown to be strongly entrenched in Germanic languages. Further, the examples in (24)–(26) cannot be regarded merely as violations of selectional restrictions associated with the verbal heads—or even as violations which might trigger manner-based implicata. If, for example, (26) merely exemplified a violation of the selectional restrictions associated with the verb *analyze*, we would fail to predict its well-formedness—let alone the uniformity of its interpretation across speakers; (26) is necessarily interpreted as denoting metaphorical caused motion.

Cases like (24)–(26) give strong evidence that the principle of lexical licensing, despite providing a parsimonious account of transparent cases like (21)–(22), is invalid. The alternative, construction-based model of argument structure outlined by Goldberg (1995) is founded on a body of work, of which Talmy (1988) is representative, which focuses on universal differences in the inventory of concepts expressed by open- versus closed-class elements, and in particular on the nature of the semantic interaction between grammatical and lexical elements. Crucially, grammatical constructions are viewed as belonging to the general set of meaning-bearing grammatical elements, which includes prepositions and derivational markers. An essential tenet of these works is expressed in (27):

(27) Override principle. If lexical and structural meanings conflict, the semantic constraints of the lexical element conform to those of the grammatical structure with which it is combined.

Zwicky (1989) proposes a similar universal interactional principle, which he relates to Panini's Law, since it involves the specific taking precedence over the general: 'Requirements in an evoking rule override those in an invoked rule' (p. 38). In acknowledging the applicability of (27) to cases like (24)–(26), we embrace the view that linking patterns are meaningful—that is, that they contribute schematic semantic structure distinct from that contributed by the verbs with which those patterns combine. As grammatical constructions, linking patterns are complexes of formal, semantic, and pragmatic features. On this view, we would expect linking patterns to exhibit idiosyncratic constraints. For example, we would expect that semantic constraints above and beyond those which restrict the theta frame of the input verb would be relevant for determining the applicability of a given linking pattern. These idiosyncratic constraints might include constraints on the pragmatic role or topological properties of certain arguments. A prominent topological restriction on the semantics of the applicative pattern was discussed in section 2.3: *be*-predications, as Brinkmann observes (1997: 81) 'describe motion to the exterior of an object'.

Among the linking patterns considered by Goldberg (1995) are the *ditransitive* pattern (whose core semantics she captures with the formula 'x CAUSES y TO RECEIVE z'), the *caused-motion* pattern ('x CAUSES y TO MOVE WITH RESPECT TO z') and the *resultative* pattern ('x CAUSES y TO BECOME z'). Examples of each of these patterns are given in (28)–(30):

(28) We gave her the account.
(29) She put the checkbook on the counter.
(30) We painted the walls white.

Goldberg uses the term *sentence type* to refer to these linking patterns. In accordance with Fillmore & Kay (1997: Ch. 8), however, we will regard linking patterns not as sentence structures but as verb-level constructions, which unify with the lexical entries of verbs. This unification has the effect of augmenting what Fillmore & Kay refer to as the MINIMAL VALENCE of the verb (the repertoire of semantic roles inherent to the meaning of the verb). The FULLY SPECIFIED verbal valence which results from unification of a verb's lexical entry with one or more linking constructions is one in which each semantic role is assigned a grammatical function.

A crucial assumption of Goldberg's account, which is adopted here, is the idea that the repertoire of thematic roles assigned by the linking construction may PROPERLY INCLUDE the repertoire of thematic roles in the verb's minimal valence. In (31)–(33) we give examples of proper inclusion for each of the linking patterns exemplified in (28)–(30):

(31) We painted them a landscape.
(32) She blew the dust off the picture.
(33) We cried our throats ragged.

The verb *paint*, a verb of creation, denotes a two-place relation, involving the creator and a created item. However, sentence (31), an instance of the ditransitive linking pattern, adds an additional participant to the creation scenario—a potential recipient. This recipient is not intrinsic to the creation scenario; it is instead intrinsic to the transfer scenario with which the ditransitive pattern is associated. Likewise, while the verb *blow* is a one-place relation, involving an agent, (32) adds two additional participants—a theme and a goal. These participants are licensed by the caused-motion construction which the sentence instantiates. Finally, in (33), the verb *cry* appears with two more participants than it ordinarily has—a patient and a resultant state. The additional participants are contributed by the resultant-state construction that licenses (30).

The examples in (31)–(33) strongly resemble the examples in (24)–(26), which were used to undermine the validity of the lexical-licensing principle. Both sets of examples involve the override principle given in

(27). We can regard linking patterns like the ditransitive and caused-motion patterns as CONCORD constructions. The theta frames associated with these patterns may, and indeed typically do, match those licensed by the particular verbal head. Examples of concord, given in (28)–(30), are those which provide the motivation for the lexical-licensing principle. Goldberg (1997) refers to these kinds of examples as instances of INSTANTIATION, in which the verb codes a more specific instance of the scene designated by the construction. The verb may also code the MEANS by which the action designated by the construction occurs (Goldberg 1995, 1997). Examples of the means relation are given in (31)–(33), in which, respectively, blowing is described as the means by which the dust is moved from one location to another and crying is the means by which the hoarseness is effected. The means and instantiation relations are mutually exclusive. The means relation is operative only when the theta frame associated with the construction properly includes that of the verb.

We view the *be*-pattern, whose formal representation will be given in section 3.8, as a transitive linking pattern like those exemplified in (31)–(33). Full consideration of its semantic and linking constraints will be delayed until section 4; it is sufficient here to say, as in the introduction, that it denotes thorough coverage of a location by a theme. This general semantic scenario is compatible with two more specific scenarios, which are minimal variants of one another: a trivalent causative scenario, in which an agent is present along with locative and theme, and a bivalent scenario entailing only theme and locative. The two versions of the construction differ with regard to their valency: the trivalent licenses the theta frame ⟨agent, theme, locative⟩ whereas the bivalent licenses the theta frame ⟨locative, theme⟩. While the bivalent version *instantiates* the coverage scene, the trivalent version *entails* that scene, in that the latter scene includes an agent which effects coverage of the location by the theme. This semantic intersection is reflected in the sharing of single linking constraint: the locative must be encoded by a direct (nonoblique) grammatical function. This situation is parallel to that described by Michaelis (1993) for Latin, in which entailment relationships between situation types, e.g. those of removal and lacking, are reflected syntactically in a shared linking constraint: the theme is ablative or genitive.

We will use the trivalent version of the *be*-pattern to exemplify the semantic interaction between construction and verb. Following Goldberg (1995: 50), we will use the term FUSION to refer to the mechanism by which interpreters infer coreference relationships between arguments of the construction and participant roles assigned by the verb, where the latter are more specific instances of the former. We will assume, also in accordance with Goldberg (1995: 65), that fusion is constrained by the

Shared Participant Condition: at least one argument role of the construction must be fused with a participant role assigned by the verb. The verb may bear a means relation or an instantiation relation to the event type denoted by the construction. Sentence (34) is an example of instantiation, while (35) is an example of the means relation:

(34) Sie **belegte** ihre Pizza mit Salami.
'She put salami on her pizza [as a topping].'
(35) Die Stadt will das Gelände mit Einfamilienhäusern **bebauen**.
'The city intends to build up the site with single-family homes.'

Example (34) exemplifies the instantiation relationship: the theta frame licensed by the trivalent verb *legen* is identical to the constructional theta frame. Example (35) exemplifies the means relationship between the bivalent verb *bauen* and the trivalent constructional theta frame. In this instance of the applicative construction, the agent role of the construction is fused with the builder role of *bauen* and the theme role of the construction is fused with the patient (factitive theme) role of *bauen*. The location role is unfused, since it is assigned by the construction alone. In the resulting predication, the verb, which denotes the creation of a structure, simultaneously denotes the means by which coverage (of the site) is effected. The reconciliation of verb and constructional semantics during interpretation requires the inference that multiple buildings have been built, since only on this understanding is coverage entailed.

By assuming a constructional account of argument structure, we account not only for such reconciliation effects but also for all other features of *be*-predications which are not proper to the input verbs. These are precisely the noncompositional features of *be*-predications that proved troublesome for the Brinkmann account. For each of these features, we will consider the alternative account offered by a construction-based model. The phenomena to be considered are: null complementation, valence augmentation, valence creation, the exteriority constraint, and the holistic-goal constraint.

3.2 *Null complementation*

As discussed in section 2.3, the omission of the theme argument requires certain grammatical conditions—not merely semantic ones. Under a construction-based account of argument structure, these conditions can be represented in a straightforward way. Each construction defines constraints on null complementation. In the case of the oblique-goal pattern exemplified by nonapplicative transfer verbs like *laden*, we follow Fillmore & Kay (1997) in assuming that null complementation is licensed

by a trivalent linking construction which pairs a locative argument with an oblique grammatical function. In the case of the *be*-pattern, null instantiation is licensed by a trivalent linking construction which pairs a theme argument with oblique. The constructional account of null complementation is actually implicit in Brinkmann's statement of the Nonindividuation Hypothesis, presented in section 2. Despite the fact that Brinkmann claims to have provided a general constraint governing omissibility of themes, this constraint is not general but particular—it concerns a particular pairing of syntax and semantics which we will describe in section 3.8 as the OBLIQUE-THEME CONSTRUCTION, a construction which unifies with the applicative construction.

3.3 *Valence augmentation*

As described in section 2.2, an alternation-based account cannot plausibly represent *be*-predications for which no 'source' or 'input' verb exists. One case of this nature is that in which the *be*-pattern 'adds' arguments that are not part of the theta frame of the unprefixed verb. One such case is that of *bemogeln* 'cheat', discussed in section 2.2. An attested example illustrating both prefixed and unprefixed uses of *mogeln* in a single passage is given as (36):

(36) WKD/bza.00141, Berliner Zeitung/89.12.07/s:3.
W. Schwanitz: Es ist beträchtlich. Prozentzahlen würden das verdeutlichen, die kann ich aber nicht nennen. Kein Geheimdienst dieser Erde tut das oder er **mogelt**. Ich will Sie nicht **bemogeln**.
'W. Schwanitz: It is a considerable number. Percentages would underscore this but I cannot give them. No secret service on earth does that, unless they are cheating. I don't want to cheat you.'

In the last sentence of (36), *Ich will Sie nicht bemogeln*, a malefactee argument which is not otherwise expressible appears as the direct object. An additional case of valence augmentation was discussed in section 2.3 with respect to (6), repeated here as (37):

(37) Message ID ⟨35fa4ec9.0@netnews.web.de⟩
SELBSTKLIMMER = Kletterpflanzen, die mit speziellen Haftorganen Wände oder andere Flächen direkt **bewachsen** [. . .].
'Self-climbers=climbing plants that directly grow walls or other surfaces with the help of special adhesive/sticky extremities.'

In (37) the object function is linked to an argument whose status is that of a locative adjunct within the valence frame of the unprefixed verb (*wachsen*).

The final case of valence augmentation discussed in section 2.3 combines both aspects of valence augmentation exemplified by *bemogeln* and *bewachsen*: the direct object represents a participant role which would otherwise have adjunct status and the subject represents a participant role which is not licensed at all by the unprefixed verb. Sentences (9)–(11) were used to illustrate this case for the verbs *regnen* and *beregnen* in section 2.3. The cases of *bemogeln*, *bewachsen*, and *beregnen* all prove problematic for an alternation-based view of argument structure, in which linking rules effect changes in the syntactic expression of some set of argument roles, but otherwise conserve thematic structure.

These cases receive a straightforward and motivated account under the constructional view. On the constructional account, as described above, the valence set licensed by a linking construction may properly include that licensed by the verb with which that construction combines. Where verb and construction assign identical argument roles, as in the case of the subject argument in (35), the two roles simply fuse.[8] Where the theta frame of the construction contains a thematic role or roles NOT licensed by the theta frame of the verb, there is override as per the principle (27): the argument roles of the construction are 'added' into the verb's valence set as verb meaning and construction meaning are combined. What this means in the case of a sentence like (37) is that the theta frame of the verb *wachsen* intersects with the theta frame of the construction via the means relation. The predicate-argument structure resulting from the integration of verb and construction meaning contains a participant which denotes the location covered by means of growth.

3.4 *Valence creation*

The limiting case of valence augmentation is that in which the head of the *be*-predicate is not a valence-taking element in the lexicon. These are cases of valence creation, as exemplified by deadjectival and denominal *be*-predications. While deadjectival and denominal *be*-verbs are highly prototypical instances of the *be*-pattern, the Brinkmann analysis, as we saw in section 2.2 above, is forced to posit phonologically null verbs in the input semantic representations of these applicatives—a move that requires

[8] For fusion to take place, the relevant roles of verb and construction need not always be identical; they may instead be merely compatible, as in the case of *befahren* ('be-drive'), illustrated in (41). The bivalent version of the *be*-construction calls for a theme, while the verb *fahren* supplies an agent. However, since this verb denotes directed motion, the agent is also a theme, and therefore fusion of the verb's agent argument and the construction's theme argument is straightforward—the subject denotatum can easily be construed as both agent and theme.

recourse to abstract constructs of dubious validity and the stipulation that the input semantic representation cannot be lexicalized. On the constructional account, valence creation comes about through the same highly general mechanism that underlies valence augmentation. Let us consider again the examples of valence creation (4)–(5) discussed in section 2.2. Valence creation differs from mere valence augmentation in two respects. First, cases of valence creation involve a form-class override: the nominal or adjectival syntactic feature of the input element is overridden by the verbal syntactic feature of the construction in accordance with (27), the override principle. Second, cases of valence creation do not involve fusion of participant roles in the input and constructional theta frames, quite simply because the open-class element which combines with the applicative construction in cases like (4)–(5) has no theta frame. Instead, the repertoire of roles contributed by the input item are participants in the larger semantic frame which constitutes our understanding of the socio-cultural context in which the property or entity plays a role. By semantic frames we have in mind the schemas Fillmore (1977, 1982, 1985) uses to represent lexical semantics and which underlie his contention that all linguistic meaning is 'relativized to scenes' (1977: 59). For example, in (4) the nominal *Schild* is meaningful only relative to a schema which includes streets and streetworkers. In (5) the adjective *frei* is meaningful only relative to a schema which includes captives and liberators.

By combining with the applicative construction, the noun not only receives a valence structure, but also an event construal which is compatible with the semantics of the applicative construction. In other words, the event denoted by the predication is one involving coverage of a location by a theme. For example, *beschildern* in (4) denotes the activity of placing signs at regular intervals along the bike path. The question that arises here is precisely how we capture a crucial felicity condition identified by Clark & Clark (1979) upon the use of denominal verbs: the source or 'parent' word must denote one thematic role in the situation, while the remaining surface arguments of the denominal denote other roles in that situation. How do we ensure, for example, that the parent noun of the verb *beschildern*, *Schild*, is taken to be the theme of the coverage event? Our solution, which will be implemented in section 3.8, is to reframe this question by rejecting the assumption that the parent nominal in fact fills the theme role. The parent nominal is not referential, and therefore could not be said to refer to any particular participant in any given event. Instead, we claim, the parent nominal renders the actual theme argument RECOVERABLE, and thereby omissible as per the oblique-theme construction, which allows null instantiation of theme arguments as discussed in section 3.2. Evidence for this claim comes from the fact that any theme argument whose identity the

interpreter might NOT readily recover from the category denoted by the parent noun may be syntactically present, as in (38):

(38) 4809664:
Die Berkersheimer Grundschule in der Untergasser Hohl wird mit zwei Tafeln **beschildert**, die in der Straßenverkehrsordnung gar nicht vorgesehen sind.
'The Berkersheim Elementary School on Untergasser Hohl Street will be signed with two signs that are not even part of the traffic regulations at all.'

These examples strongly suggest that it is the skeletal structure of the construction alone, and not any aspect of lexical meaning, that licenses the interpretation of these sentences as involving transfer and the particular reading of (38) as involving multiple transfer events. A plausible account of valence creation requires the recognition of both 'bottom up' contributions to meaning (lexical meaning) and 'top–down' contributions to meaning (constructional meaning). The interpretation of denominal verbs like *beschildern* involves not only the top–down imposition of valence structure from the construction but the bottom–up importation of the rich frame semantics of the nominal element with which the construction combines.

3.5 *Exteriority*

The constructional account of the exteriority constraint discussed in section 2.3.3 with respect to the construal of *bewerfen* in (16′) is straightforward. Rather than appealing to a constraint imposed by the prefix, whose meaning, as discussed in section 2.3.3 would be construction-specific anyway, we view exteriority as constraint on the configuration of the theme element: it must be planar. The claim that this constraint belongs to the construction is substantiated by override effects. Example (16′) provides an example of such an override, but perhaps the most cogent example of an exteriority-based override effect comes from attested uses of the verb *befüllen* 'fill'. This applicative verb at first appears to violate the planar-surface constraint in that it necessarily describes an effect upon the INTERIOR of a three-dimensional space. However, we notice that attested uses of *befüllen* have iterative readings, as in (39)–(40):

(39) Frankfurter Allgemeine Zeitung, August 7, 1990
Außerdem müßten Betriebe, die Mehrwegflaschen **befüllen**, eine plötzliche Erhöhung ihrer Pfandrückstellungen bewältigen.

'Moreover companies that fill returnable bottles would have to cope with suddenly having to raise their reserve for deposits.'

(40) Süddeutsche *Zeitung*, July 25, 1994.
Darüber hinaus werden im Jemen 5 Milliarden US-Dollar für eine Erdgas-Verflüssigungsanlage bei Aden oder Mukalla fällig, um dort die Tanker nach Japan zu **befüllen**.
'Moreover 5 billion US dollars will become due for a natural gas liquefaction plant near Aden or Mukalla that serves to fill the tankers to Japan.'

In (39), the iterative reading comes from a construal in which bottles are repeatedly returned and filled. In (40), the iterative reading comes from a construal in which tankers are repeatedly emptied and filled. The iterative reading arises in each case via the override principle (27), which requires that the filling scene denoted by the verb be reconciled with the planar coverage scene denoted by the construction. The 'compromise construal' is one in which an exterior surface is affected: the iterated filling events, insofar as each occupies a different pair of coordinates, collectively define a planar region over which coverage is effected. Further discussion of the relation of the exteriority constraint to the various senses of the construction will take place in section 4.

3.6 *Holism*

On the account offered here, the source of the holism constraint is the semantics of the *be*-construction, rather than any general constraint upon the application of predicates to their direct arguments. As discussed in section 2.3.1, we reject Brinkmann's claim that the holism effect can be attributed to Löbner's Presupposition of Indivisibility. There we observed that this principle alone cannot explain why applicative predications have summative rather than integrative readings. We also depart from Pinker's account of the locative alternation, since we do not attribute the affectedness implication of *be*-predications to any general principle governing the construal of direct objects. Instead, we view the holism effect as entailed by the situation type denoted by the *be*-construction: saturation of a surface. The semantics of the *be*-construction entail coverage of location by theme at a given point in time or over the course of time.

3.7 *Concreteness and compositionality*

The constructional model is based on the sign: constructions are form-meaning pairs which differ from words only in internal complexity. Like

Montague Grammar, Construction Grammar pairs surface structure with a semantic representation; no 'deep' level of semantic representation intervenes between these two levels.

Thus, the constructional model does not rely on either lexico-semantic 'transformations' or multiple types of semantic representation (like those representations which are input to L-command and functional application in the Brinkmann–Wunderlich model). In addition, the constructional model does not rely upon abstract (phonologically null) elements; denominal verbs, for example, are not represented as arguments of phonologically unrealized verbs but as nominals which assume valence structures by virtue of unification with argument-structure constructions. The constructional model is concrete, and therefore conforms well to Jackendoff's Grammatical Constraint—a constraint on semantics which, in Jackendoff's words, 'serve(s) to make semantic theory responsible to the facts of grammar' (1983: 18). Since syntax encodes propositions related to events and states of affairs, we must assume that it does this in an efficient and relatively transparent way. It therefore makes sense to base syntactic theory on the assumption that argument-structure patterns directly express basic-level scenes.

But in attributing meaning to syntactic patterns in the interest of concreteness, we potentially undermine the fundamental purpose of syntactic theory: to describe sentence meaning compositionally. If the conceptual content of a sentence now comes not only from lexical conceptual structures but also from the syntactic patterns that contain those lexical items, we sacrifice a constrained model of semantic composition. Like Jackendoff, we question the assumption that this model must necessarily be preserved. As Jackendoff observes:

> [A] more constrained theory is only as good as the empirical evidence for it. If elevated to the level of dogma (or reduced to the level of presupposition) so that no empirical evidence can be brought to bear on it, then it is not being treated scientifically (1997a: 50).

Jackendoff's response is a reminder that empirical criteria must take precedence over the theory-internal criterion of parsimony. But we have an additional response, which Jackendoff, an advocate of enriched composition but not of a construction-based syntax, does not give: the constructional model is in fact compositional, although not in the standard sense. If the meaning of a sentence is the result of integration of verbal and constructional semantics in accordance with the override principle of (27) then that meaning results from semantic composition. In other words, we do not abandon a constrained theory of sentence meaning by acknowledging the existence of 'top-down' or constructional meaning. The mechanism of unification ensures that sentence meaning is the result of constrained combination of symbolic structures.

3.8 *The formal representation of the applicative pattern*

In this section, we will give only a brief sketch of the applicative construction and the manner in which it combines with other independently motivated constructions to license applicative sentences. A detailed treatment of the model being described here can be found in Michaelis & Ruppenhofer (in press: Ch. 4). This model, which is based upon unification, is sufficiently straightforward to permit an intuitive explanation here. Unification of constructions can best be described in terms of a metaphor involving the superimposition of slides. Any slide (construction) can be superimposed upon any other as long as the semantic and syntactic specifications on each slide 'show through'—that is, provided there is no conflict among the specifications on the slides in the stack. All linking constructions operate upon the valence set specified by a given lexical item. The number of valence elements specified by a given linking construction may be greater or less than the number of valence elements specified by the lexical verb.

One can think of the linking constructions as being superimposed in sequence upon a given verb's lexical entry (although in reality the interacting constructions apply simultaneously). The lexical entry contains a minimal valence, i.e. an array of thematic roles, whose grammatical expression is determined by the linking construction or constructions applied. A minimal lexical entry which is unified with linking constructions is said to be a fully specified lexical entry: one in which every thematic role supplied by the lexical entry is linked with a grammatical function. We depart from the Fillmore & Kay account of argument-structure unification only in one regard: we allow the override of the syntactic category of an open-class lexical item for cases in which nouns and adjectives unify with the applicative construction, a verb-headed construction. This move seems to be the only way that we can capture the observed form-class fluidity without resorting to the assumption of unconstrained polysemy that was criticized in section 3.1.

Linking in the Fillmore & Kay account is incremental, in the sense that each linking construction determines the grammatical function of only a single theta role, although all unifying linking constructions will denote the same event type and thereby have identical theta grids (e.g. the trivalent theta grid associated with transfer). Thus, the applicative construction merely constrains the syntactic realization of the locative thematic role. As described by Michaelis & Ruppenhofer (in press: Ch. 4), the grammatical realization of the remaining thematic role or roles will be determined by those constructions with which the *be*-construction combines, including the passive, active, subject and oblique-theme constructions. Figure 1 shows the

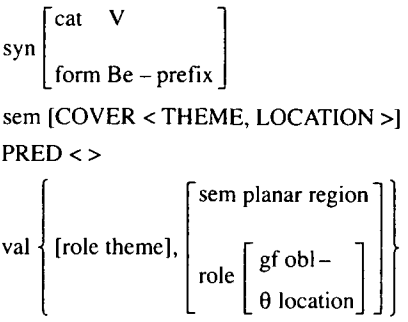

Figure 1 The applicative construction, bivalent type

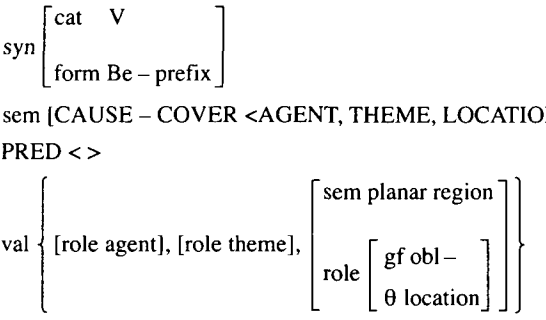

Figure 2 The applicative construction, trivalent type

bivalent version of the *be*-construction. Figure 2 shows the trivalent version.[9]

As shown in Figure 2, the trivalent pattern denotes a causative event involving a placeable object. This event may be telic (as in the case of an accomplishment construal) or atelic (as in the case of an activity construal). This analysis of caused change of location differs from those advocated by e.g. Rappaport Hovav & Levin (1998) and Hale & Keyser (1993). These authors assume that such causative events entail a change of state in which the theme remains at the location as the culmination of the event. As we will show in section 4.1, however, trivalent applicative predications may be used in situations in which the objects moved do not remain at the location state, and in which the location is accordingly unchanged.

The bivalent applicative construction has an even greater degree of aspecutal neutrality than the trivalent version of the construction. As shown

[9] A more extensive representation of the constructions in Figures 1 and 2 would show the unification requirement between elements in the event structure denoted by the construction and elements in the valence set of the construction. We have avoided showing unification indices in order to simplify the diagrams to the extent possible.

in Figure 1, the situation type denoted by the bivalent pattern is underspecified with respect to the static-dynamic contrast, since bivalent applicative predications may either denote states or events. The underspecification of aspectual information in these two constructions reflects the fact that, as we will see in section 4, the coverage schema expressed by each is compatible with stative, processual (activity), and accomplishment construals. Thus, the transitivity of the argument-structure pattern entails nothing about telicity or even perfectivity. This is a position which will be defended more thoroughly in section 4.1.[10]

We postulate that the two versions of the applicative construction are related via an INHERITANCE LINK. Inheritance networks, as per Lakoff (1987), Goldberg (1995), Michaelis & Lambrecht (1996), and Jackendoff (1997b) are used to capture relationships between linguistic signs when these relationships are not sufficiently productive to be represented as rules, but are nevertheless entrenched connections within an associative memory. The inheritance model is similar to that described by Pinker & Prince (1991: 232) as the connectionist model of memory. This model is 'both associative and superpositional: individual [linguistic] items are dissolved into sets of features, and similar items . . . overlap in their physical representations, sharing representation real estate.' In accordance with the CG tradition as established by Lakoff and Goldberg, among others, we will represent these overlap relations in terms of links in a hierarchical network, where a dominated construction inherits all nonconflicting specifications from the dominating construction. In the case of the two versions of the applicative construction, we propose that the bivalent version is related to the trivalent version by means of what Goldberg (1995) and Michaelis & Lambrecht (1996) call a SUBPART LINK: the trivalent construction subsumes the semantic representation and syntactic (linking) constraints of the bivalent construction. The analysis of trivalent *be*-predications involves the OBLIQUE-THEME construction, given in Figure 3. The oblique-theme construction has as its semantic value an event type in which an agent causes a theme to cover a location (the goal). Although we have not shown the relevant unification

[10] A reviewer has questioned the necessity of positing two applicative constructions, suggesting that the two may be combined into a single construction. While considerations of parsimony would support such a move, we see a compelling reason to distinguish two versions of the applicative construction. Since the situation type denoted by a linking construction must be of determinate valency, we would have to propose either a bivalent or trivalent version of the applicative construction. This fixing of valency would give us an undesired result. If, on the one hand, the proposed applicative construction were trivalent, there would be no construction to license bivalent applicative predications, and we would incorrectly predict the existence of trivalent applicatives formed from bivalent verbs like *wandern*, 'wander'. If, on the other hand, the proposed applicative construction were bivalent, it would not unify with trivalent verbs like *laden* ('load'), since the agent argument would fail to receive syntactic expression.

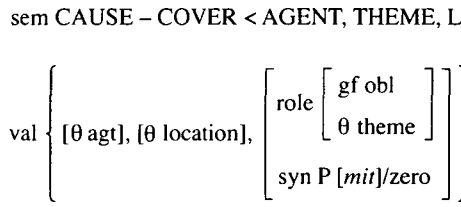

Figure 3 The oblique-theme construction

indices, the agent, theme and goal of this event type will unify with those same thematic roles in the valence set of the lexical verb. The event type denoted by the oblique-theme construction is identical to that denoted by the trivalent applicative construction, ensuring unification between the two constructions. The only linking constraint imposed by the oblique-theme construction is this: the theme argument links to the oblique grammatical function, which is realized either as a prepositional phrase headed by *mit* or as a null (pragmatically recoverable) complement. We have said nothing in the statement of the oblique-theme construction about the construal of the theme as nonindividuated. We have chosen to remain agnostic concerning the appropriate representation of the nonindividuated construal, since it is a potential rather than a requirement. As Brinkmann and others have observed, an individuated construal of the theme is compatible with applicative semantics, as in *Erna bekochte zehn Männer mit einem einzigen Truthan* ('Erna be-cooked ten men with a single turkey').

The oblique-theme construction unifies with denominal applicative verbs like *beschildern*, as in (4). Here, the identity of theme argument can be reconstructed on the basis of the semantics of the lexical form with which the various linking constructions unify. This lexical form is a nominal; it is only by virtue of unifying with an argument-structure construction—in this case the trivalent applicative construction—that the nominal receives a theta frame. In accordance with the Gricean principle of omission up to recoverability (modulo constructional constraints), a theme argument which is not recoverable from the type denoted by the verb, owing to the greater specificity of that theme argument, will be syntactically realized, as in the English example *He soled my shoes with gum soles* and the German example given in (38).

Our model of the interaction between a verb and a given version of the applicative construction, bivalent or trivalent, relies upon the distinct manner in which verbs and constructions ensure realization of thematic structure. In short, verbs rely upon constructions in ways that constructions do not rely upon verbs. For the verb, realization of thematic structure

means ensuring syntactic expression of each subcategorized argument through fusion: each role licensed by the verb must be identified with a role licensed by a linking construction. For the construction, realization of thematic structure means ensuring syntactic expression of each argument, whether or not that argument fuses with an argument licensed by the verb. What this means is that the construction's arguments may be expressed by maximal categories (e.g. NP) which are not part of the subcategorization frame of the verb. For the bivalent applicative construction, this situation is exemplified by predications containing *bemogeln* ('cheat'): the 'malefactee' argument is contributed by the construction in Figure 1. This construction also constrains the grammatical function which can be assigned to this role: it must be either subject or object (to be determined by which of the two voice constructions, passive or active, unifies with this applicative construction). For the trivalent applicative construction, verbal-valence augmentation is exemplified by the verb *bebauen* ('build up'). As a verb of creation, *bauen* licenses two arguments, agent and theme. The construction both adds a goal (location) argument to the verbal valence set and restricts the grammatical function to which the location argument can be linked, as described above. Whenever the valence set licensed by the construction properly includes that licensed by the verb, the verb bears a means relation to the event type denoted by the construction.[11]

The PRED variable in Figures 1–2 is used in accordance with Goldberg (1995) to represent the open-class element with which the construction unifies. The angled brackets to the right of the PRED variable represent the theta frame licensed by the open-class element. As described in section 3.4, the open-class element with which the *be*-construction unifies may be an inherently nonrelational element which thereby lacks argument structure. For example, the open-class element may be a noun, as in the case of *beschildern* 'put up traffic signs' and *besohlen* 'sole, as of a shoe'. As we argued in that section, appropriate thematic elements can be found in the rich background knowledge with which the particular word is associated. This

[11] How do we ensure that each verb unifies with the appropriate version of the applicative construction? As it stands, there is nothing to prevent a trivalent verb like *laden* 'load' from unifying with the bivalent version of the applicative construction. Although the agent of *laden* would not fuse with any role in the theta frame of the applicative construction, it would be linked to the SUBJECT grammatical function by default Subject Principle, since the theme and location are each subject to more specific linkings—oblique Theme and applicative, respectively. We also have no obvious way to prevent a bivalent verb like *wandern* 'wander' from unifying with the causative (trivalent) version of the applicative construction. In such an instance, the applicative would merely contribute an agent to the verb's valence and require nonoblique expression of the location. The theme would be subject to the oblique Theme linking, and the agent would again receive subject coding by the default Subject Principle. By allowing such unification, we overgenerate, since *bewandern* e.g. could not be used to denote causation of coverage. It appears therefore that we must stipulate an optimization principle whereby the verb unifies with that version of the applicative whose valency is closest to its own.

semantic frame contains participant roles, and these are the roles which will be 'plugged into' the argument set of the PRED variable. In the case of the verb *besohlen*, for example, this set will contain the cobbler, the sole and the shoe. These frame-specific roles are required to fuse with the more schematic argument roles licensed by the applicative construction. For this reason, we assume that denominal verbs necessarily have an elaboration relationship to the applicative construction.

4 THE SEMANTICS OF THE APPLICATIVE PATTERN

Like Brinkmann, we argue that *be*-verbs form a coherent semantic category. However, under our account this semantic coherence does not arise from the interaction of syntactic and general semantico-pragmatic principles. Rather it is seen as a reflection of the polysemy structure associated with the applicative construction. In accordance with Goldberg's (1995) analysis of the English ditransitive and other argument-structure patterns, we postulate that the meanings of the *be*-pattern are related via independently motivated patterns of semantic extension, and represent a radial category of senses. As in Lakoff's (1987) description of radial-category structure in classifier systems, the polysemy structure at issue here allows for the cancellation of implications associated with the central sense. We will see that certain senses invoke components of the coverage scenario, like transfer, without entailing coverage. We will also see an example of chaining within the network: one extended sense shares semantic content with another extended sense but not clearly with the central sense.

The exposition of senses associated with the applicative pattern will focus upon specific (and in many cases partially overlapping) classes of verbs (e.g. verbs denoting iterated activity). A question that arises is how this mode of description can be reconciled with our central contention—that the semantic effects which distinguish *be*-predications from their paraphrases are attributable to the semantics of the applicative pattern rather than to the semantics of a particular set of verbs. In other words, if we view the meanings of *be*-predications as the products of a reconciliation procedure whereby the meaning of the verb is brought into conformity with the meaning of the construction, how can we also treat the *be*-verbs as 'stored', i.e. listed, elements? The answer to this question requires us to reject a principle which Langacker (1987) has called the RULE-LIST FALLACY. Langacker applies this term to the (typically implicit) principle which holds that complex structures that can be modeled by an on-line process cannot also be viewed as stored. For example, with regard to morphology,

Bybee (1995) rejects the idea that the products of regular morphology are exclusively generated online. On the basis of experimental work by Losiewicz (1992), Bybee argues that high-frequency regular past-tense forms are stored in the lexicon. By the same token, we view high-frequency *be*-verbs as clustering in narrowly defined lexical classes (like those listed by Günther 1974) that reflect the (conventionalized) patterns of semantic extension observed for the applicative construction. However, we simultaneously maintain that the interpretation of *be*-predications involves the integration of constructional meaning and verb meaning. Were this not so, productive uses of the applicative pattern could not plausibly be modeled (see section 3.4 for argumentation on this point).

The discussion will proceed as follows. In section 4.1, the central sense will be described. In section 4.2, we will describe three classes of *be*-predications which involve metaphorical extensions of this basic meaning. In section 4.3, we will look at five classes of *be*-predications whose meanings relate to the central sense via various inductive inferences. In section 4.4, we will consider the relationship of this semantic analysis to a diachronic analysis of the *be*-pattern given by Ruppenhofer (1999). In particular, we will consider the relationship between the meaning of the *be*-pattern as we have described it and earlier uses of the *be*-prefix to denote ENCLOSURE and PROXIMITY.

This exposition of the usages of the applicative pattern requires a disclaimer: the order of presentation of the verb classes (that is, the usages of the construction) is not intended to reflect any avenue of development of these senses. Instead, we view each sense extension as exploiting a semantic potential inherent in the semantic schema which represents the core sense; no extended sense is viewed as dependent on any other. While there is evidence (to be discussed in section 4.4) which suggests the historical primacy of the coverage sense of the pattern, we cannot on the basis of this evidence propose a relative chronology of the extended senses. Further, we do not intend to suggest that metaphorical extensions of the applicative pattern are recent innovations. Metaphorical extensions, like the use of the applicative pattern to describe thorough discussion of a topic, are old. This semantic extension seems to be at least as old as Middle High German, as suggested by a look at the entries for *bereden* 'discuss', *besprechen* 'discuss', *beklagen* 'complain, mourn', *besehen* 'look at, examine', *beschauen* 'look at, examine', *beschreiben* 'describe', *besingen* 'sing about, of', and *bedenken* 'think about, reflect on' in Lexer's (1872) Middle High German dictionary and in the available installments of the Early Modern High German dictionary (Göbel & Reichmann 1999).[12] The radial model of

[12] Within the class of *be*-verbs denoting thorough discussion, there are, however, relatively recent additions. For example, *besprechen* 'discuss' seems to have lacked the 'discuss' sense in Middle High

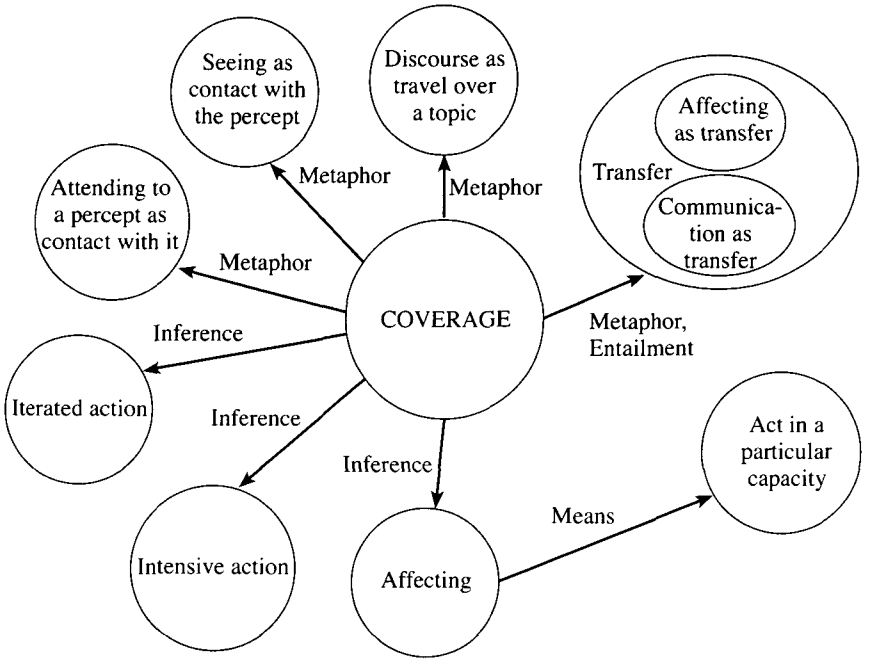

Figure 4 The meanings of the applicative pattern

senses which we will offer, in which each sense of the pattern overlaps semantically with the core sense, is consistent with the diachronic facts and provides a plausible model of what might make the various senses cohere synchronically. Figure 4 shows the associative network of meanings which will be discussed in the forthcoming subsections.

4.1 *The prototype*

The conceptual archetype with which the applicative pattern is associated is a scene in which a theme occupies multiple points within two-dimensional space.[13] We have represented this schema by the predicate-argument structure *cover' (theme, location)* in the representations of the bivalent and trivalent applicative constructions in Figures 1 and 2. As shown in those

German but meant only '1. agree on 2. talk to, address 3. accuse of 4. consult, confer [used with reciprocal *sich*]'.

[13] The analysis presented here does not extend to what we may call pseudo *be*-participles, i.e. forms that appear to be participles of *be*-verbs but that lack extant base forms. For instance, in the case of *beamtet* 'being state appointed [e.g. as a teacher, judge, etc.]' the corresponding verb, *beamten*, has become obsolete. Such ornative applicative participles are analogous to uses of the English past participle to convey attributes, e.g. *long-haired*.

figures, this predicate-argument structure is the semantic value of the bivalent version of the applicative construction while it is entailed by the causative semantic representation of the trivalent applicative pattern. We intend this predicate-argument structure as a pointer to a semantic analysis, rather than as a semantic analysis per se. As we will argue in this section, the semantic structure of the applicative construction is an image schema, in the sense of Lakoff (1987) and Langacker (1987), and as such is not highly amenable to a propositional representation. We have seen, for example, that, as observed by Brinkmann (1997), the semantic structure of the applicative pattern is not appropriately represented by a formula involving universal quantification over subparts of the location argument. By the same token, as we will see in this section, applicative semantics cannot be captured by any particular Aktionsart-based representation. In what follows, we will elaborate upon the image schema which underlies the concept of coverage that we have in mind. We will being this exposition by looking at the bivalent and trivalent instantiations of this schema, illustrated in (41)–(42), respectively:

(41) MK1/MHE.00000, HEUSS, ERINNERUNGEN 1905–1933, Memoiren
Nun hatte ich wohl die Ostsee **befahren** und die Nordsee geschmeckt [. . .].
'True, I had sailed around the Baltic Sea and I had had a taste of the North Sea.'

(42) 36713673
Jugendliche Straftäter würden bewußt Sitze zerstören, Fenster heraustreten, Wandverkleidungen **beschmieren** oder von den Wänden reißen.
'Youth offenders would purposely destroy seats, kick out windows, smear wall coverings or tear them off the walls.'

Sentence (41) describes extensive travel over the Baltic Sea while (42) entails that significant portions of each wall hanging are smeared. However, the notion of saturation at stake here does not require that an entire surface is covered: some parts of each wall hanging may have been spared and areas of the Baltic Sea may not have been reached. Moreover, while the location may often be affected in the sense that it undergoes a noticeable change of state, this is not a necessary consequence of saturation: the Baltic Sea is not changed by the sailor's travels in (41). Finally, notice that saturation may be summed over time, since, for example, the sailor can only occupy a single location at any given time. The type of construal is equivalent to SUMMARY SCANNING, a mode of cognitive processing in which co-activation of scanning events produces a coherent gestalt (Langacker

1987: 144–5). In the case of the sailing activity the individual scanning events establish distinctness of sailor and water surface and track the change in relative position. If all the scanning events are overlaid at once (in the way transparencies can be overlaid), there will be only one water surface but many positions occupied by the sailor. This overlay configuration is identical to the coverage schema denoted by the applicative construction.

Notice that while we have used the terms *configuration*, *schema*, *scene*, and *archetype* in this section to describe the saturation constraint, we have not referred to an *event type*. This may appear puzzling, since the constructional model of argument structure upon which we base this analysis is one in which argument-structure patterns denote basic-level event structures. We have avoided the term *event structure* or *event type* here because these terms suggest that the coverage schema can be characterized as belonging to a particular aspectual class. Coverage is a topological notion, and has no temporal dimension. Accordingly, the saturation constraint may be satisfied by both perfective and imperfective predications. In (43), for example, a *be*-predication containing the stative verb *bewohnen* ('inhabit') denotes a situation of coverage which holds at a single point in time:

(43) MMM/102.37001: Mannheimer Morgen, 09.02.1991, Leserbriefe;
Die alteingesessenen Altriper, die den Ortskern bis jetzt noch **bewohnen**, werden sich eben mit dem noch stärker werdenden Durchgangsverkehr abfinden müssen.
'The long-time Altriperians who up until now are still inhabiting the town center will just have to get used to the increasing through traffic.'

The coverage concept associated with *bewohnen* is also compatible with a habitual construal, in which a single inhabitant effects coverage of a given location over time (44a). As shown in (44b), a *bewohnen* predication is anomalous when the location (in this case, a city) is too large to allow an individual to effect coverage over time; the prepositional paraphrase in (44c) is, however acceptable, as the coverage constraint is not operative here:

(44) a. Ekkehard **bewohnt** ein Apartment in Berlin.
'Ekkehard inhabits an apartment in Berlin.'
b. *Ekkehard **bewohnt** Berlin.
'Ekkehard inhabits Berlin.'
c. Ekkehard **wohnt** in Berlin.
'Ekkehard lives in Berlin.'

Within the class of perfective applicatives, both accomplishment and processual (activity) readings are attested. These two readings are closely aligned semantically, since accomplishments entail processes. Nonpunctual

perfective verbs (e.g. *walk*) typically have both activity and accomplishment readings, and the same can be said of bivalent applicative sentences like (41), which have both telic and atelic readings. If the interpreter views the sailing activity as having culminated in thorough coverage of the body of water by the sailor's craft, the predication denotes an accomplishment. If instead the interpreter construes the sailing activity as a set of subevents with no inherent point of culmination, the predication denotes an activity (as expressed by the processual gloss 'sail around'). Because these two readings are available, both types of durational adverbials are licensed, as shown in (44):

(44) Sie **besegelten** die Karibik { in drei Monaten / drei Monate lang }.

'They sailed the Carribean { in three months / for three months }.'

Since bivalent applicatives denote both processual and static situations, the coverage schema in our framework cannot be equated with the concept of an incrementally interpreted location argument. Trivalent applicative predications, which are necessarily perfective, generally have accomplishment readings, as in (45):

(45) Sie **belud** den Wagen { in drei Stunden / *drei Stunden lang }

'She loaded the wagon { in three hours / *for three hours }

In such cases our analysis overlaps with Brinkmann's analysis (as described in section 2.3.2): the location argument is incremental in the sense of Dowty (1991), since its 'exhaustion' determines the time course of the event. However, trivalent applicative predications do not always require telic construals and do not always permit them. The telic construal appears to be required only when the base verb is telic (contingent upon a bounded construal of the object-denotatum), as in the case of *laden*. The trivalent applicative predication in (46), which contains the atelic base verb *werfen* ('throw'), does not have a telic interpretation:

(46) Sicherheitskräfte wurden { *in drei Stunden / drei Stunden lang } mit Steinen beworfen.

'Security forces were pelted with stones { *in three hours / for three hours }.'

Numerous acts of transfer occur in the course of the event denoted by (46), and yet there is no point at which transfer is complete. Thus, while the trivalent applicative construction denotes a transfer event, insofar as an agent causes a theme to move to a location, this event type has both telic and atelic instantiations. Accordingly, the term *transfer event*, like the term *coverage*, should not be taken to entail that an endpoint is reached. The trivalent applicative construction is unmarked with respect to telicity, and only predicate-argument structure fixes aspectual class. In proposing that the applicative pattern is aspectually neutral, we counter the recent analytic trend toward viewing argument-structure variation as aspectually driven (Rappaport Hovav & Levin 1998). Since numerous other linking constructions are aspectually neutral, e.g. the transitive and passive constructions, we feel it is appropriate to regard aspectual variability and valence variability as reflecting related but orthogonal categories of event structure.

As pointed out earlier, entailments shared by two situation types may be manifested in common morphosyntactic coding. Transfer has a cognate concept, removal, which is expressed by the trivalent applicative pattern as well. In the case of transfer and removal, the shared entailment is causation of change of location, and languages like Latin appear to neutralize the direction of transfer, coding the two event types identically. For example, trivalent verbs like *compleo* ('fill') and *privo* ('strip') license the same case frame, with the possibility of either ablative or genitive coding for the oblique theme argument (Michaelis 1993). In German, removal verbs coded by the applicative pattern typically denote robbing, e.g. *bemopsen*, *berauben*, and *beklauen*. An example involving the verb *beklauen* is given in (47):

(47) 36891726
Allein die Gelnhäuser Stadthalle habe das Trio zweimal **beklaut**, berichtete ein Kripospreche am Donnerstag.
'A police spokesman reported on Thursday that the trio robbed (be-robbed) the Gelnhausen City Hall twice.'

4.2 *Metaphorical extensions of the central sense*

The coverage schema associated with the basic usage of the applicative pattern is compatible not only with concrete physical situations but also abstract ones. Various metaphorical links allow the use of the coverage schema in the domains of speech, perception, and attention. In accordance with Lakoff's (1990) Invariance Hypothesis, by which ontological components of a basic-level semantic schema are conserved by metaphorical extensions of that schema, we can observe that these metaphorical mappings

replicate the thematic and linking structure associated with the bivalent applicative construction. We treat these metaphorical usages as distinct (conventionalized) senses of the *be*-pattern because otherwise there would be no way of predicting which theoretically eligible metaphors would be expressed by the *be*-pattern and which would not. In the following three subsections, we describe three metaphorical extensions.

4.2.1 Seeing is contact with the percept

One's gaze goes from one's eyes to what one sees. One sees whatever one's gaze touches (Lakoff 1987: 437). These metaphors underlie German usages like the following:

(48) Sie konnte ihre Augen nicht von ihm nehmen.
'She wasn't able to take her eyes off him.'

(49) Er richtete seinen Blick auf das Buch.
'He turned [directed] his eyes to the book.'

(50) GR1/TL1.12150 Weyden, C.: Träume sind wie der Wind. Hamburg
'Ich hoffe es.' Und wieder ging sein Blick zu dem anderen Tisch hinüber.
'"I hope so". And another glance went over to the other table.'

Verbs, prepositions, and particles that are used to designate a trajector's movement to a physical object can be extended metaphorically to designate a metaphorical trajector's movement across the field of vision (*cast a stone at—cast a glance at; point a weapon at—point one's eyes at*). According to this model, inspection of a percept is thorough coverage of the percept by the perceiver. In *be*-predications that denote vision, the eyes are construed as a theme moving over the percept. The following *be*-predications instantiate this particular conception:

(51) BZK/W59.00790, WE 07.09.59, S.06, LESERBRIEFE
Niemand sollte sich den Gang zum alten Museum ersparen. Man muß einmal Zeit genug haben, den Isenheimer Altar des Meisters Matthies zu **beschauen**, den ganzen Riesenaufbau in all seiner Wucht und Farbentiefe.
'Nobody should avoid the walk to the old museum. For once, one has to spend enough time to examine (lit. look) the Isenheimer altar of master Matthies, the whole gigantic body in all its massiveness and depth of color.'

(52) MK1/LFH.00000, FRISCH, HOMO FABER, Roman. Suhrkamp
Später auf Deck äußerte Sabeth (ohne Drängen meinerseits) den Wunsch, einmal den Maschinenraum zu **besichtigen**, und zwar mit mir [. . .]

'Later on deck Sabeth expressed the wish (without me urging her) to tour (lit. sight) the engine-room, and to do so with me [. . .]'

Although one might presume from the description of the metaphor that the agent maps to the perceiver and the theme to the gaze, the two roles are not obviously distinct, and we have found no *be*-predications in which the gaze/theme maps to an oblique expression. Insofar as the perceiver is difficult to separate from his or her perception, the agent and theme roles appear to conflate, and only the bivalent version of the applicative construction is involved. The verbs in (51)–(52) have an instance relation to the applicative construction, since the perceiver and percept arguments map to theme and location, respectively. The joint fusion of the perceiver and the means of perception with the theme argument is a general characteristic of examples involving perception, including those which involve coverage of the percept via other sensory modalities, e.g. olfaction, as in (53):

(53) Message ID ⟨6vdjTb12mnB@sampo.han.de⟩
Als Nichtraucher behaupte ich, daß sie nicht "stinken". Immerhin hatte ich auch schon Gelegenheit, Raucherinnen aus ziemlicher Nähe **beriechen** zu können. Ergebnis: sie stinken nicht.
'As a [male] non-smoker I say that they [smokers] do not "stink". At least, I have had the opportunity to sniff female smokers from rather close distance. Conclusion: they don't stink.'

4.2.2 Attending to something is directing one's attention to it

Conventional examples of this metaphor are given in (54)–(56):

(54) Er richtete seine Gedanken auf das Thema.
'He directed his thoughts to the topic.'
(55) Wir kommen mit unseren Gedanken zum Ausgangspunkt zurück.
'We are bringing our thoughts back to our starting point.'
(56) Wohin gehen Ihre Überlegungen?
'What are you thinking of (lit. Where are your thoughts going to)?'

Via this metaphor, tracking or monitoring a percept can be viewed as maintaining contact with it across a set of space-time coordinates, where the emergent configuration involves coverage of the region defined by that cluster of points. This conception underlies bivalent denominal *be*-predications like the following, in which, as in the vision case described in section 4.2.1, the cognizer and the cognizer's focus of attention are conflated and jointly fuse with the role of theme:

(57) Der Polizist **beobachtete** den Verdächtigen.
'The policeman watched (lit. observationed) the suspect.'
(58) Peter muß seine kleine Schwester **beaufsichtigen**, wenn seine Eltern zur Arbeit sind.
'Peter has to look after (lit. supervisioned) his little sister when his parents are at work.'
(59) Peter hat den Unfall verursacht, weil er die Vorfahrt nicht **beachtete**.
'Peter caused the accident because he didn't pay attention to (lit. attention) the right of way.'

4.2.3 Discourse is travel over a topic

Other *be*-predications express metaphorical mappings via the TRAVEL METAPHOR: mental activity and conversation are both movement through some metaphorical space, the space being identified with the subject-matter of thought or speech (Sweetser 1987, 1990). We find this travel metaphor in German usages like (60):

(60) Auf dieses Thema müssen wir noch einmal zurückkommen.
'We will have to come back to this topic.'

In these metaphorical usages we find verbs, particles, and prepositions extended from their original domain of physical movement to the domain of movement in speech or thought. Such metaphorical situations may be expressed by *be*-predications when the saturation implication is prominent, i.e. when the theme (the conversant) covers the location (the topic) comprehensively. Compare sentence (61), which describes a serious discussion, to sentence (62), which describes the conversational efforts of two previously unacquainted people on a first date:

(61) R1/TL1.09008 de Groot, B.: Dein Vater wird uns liebgewinnen.
Nebenan befand sich Olga Gorenkamps Nähzimmer, die Tür war nur angelehnt. Jetzt **besprachen** sie eingehend die neue Situation. Und sie war äußerst günstig für das Weingut.
'Next door was Olga Glorenkamp's sewing room. The door was ajar. Now they were discussing (lit. speaking) the new situation in detail. And it was extremely favorable for the winery.'[14]

[14] We view the adverb *eingehend* ('in detail') as sympathetic to the implication of thorough discussion rather than as inducing that implication, since this implication would be present whether or not this adverb were present.

(62) MK1/LJA.00000, JOHNSON, DAS DRITTE BUCH ÜBER ACHIM
Karsch sagte ja. Er war erstaunt, daß sie gebeten hatte. Sie verabredeten sich für einen Abend, an dem ein Fußballspiel viele Fahrzeuge aus der Umgebung heranholen und dann wieder auf die Autobahn schicken würde, sie trafen sich vor dem Theater, **sprachen** über die Unterschiede der beiden deutschen Straßenbilder, fuhren los.
'Karsch said yes. He was surprised that she had asked. They made an appointment for an evening when a soccer game would attract a lot of cars from the surrounding area and send them back on the highway later. They met in front of the theater, spoke about how different the street looked in the two Germanies, and then drove off.'

The relationship between thorough discussion and coverage of a surface is evident as well in the English contrast between talking something *over* and talking *about* something.

4.3 *Other extensions of the central sense*

In addition to the metaphorical uses of the central senses discussed in section 4.2. there are extensions of the central senses in which the coverage semantics is either missing or of secondary importance. The majority of these extensions appear to be the result of pragmatic inferences like those described by Hopper & Traugott's (1993) as examples of PRAGMATIC STRENGTHENING, a metonymic inference mode by which a semantico-pragmatic 'side effect' of some signification is elevated to the level of a distinct meaning, which may lack entailments of the source meaning (see also König & Traugott 1988). An example of pragmatic strengthening is the development of concessive or adversative markers from markers of temporal persistence like *still*; the newly developed marker is usable in perfective predications, where no temporal continuation is implied, as in *She still got angry* (König & Traugott 1982). In the following four subsections, we will describe four meanings of the *be*-pattern which appear to involve this metonymic mode of inference: transfer, iteration, intensification, and affectedness. A fifth subsection will consider a class of denominal *be*-verbs expressing social roles, which appear to involve the affectedness meaning.

The first class of cases, that of applicatives denoting metaphorical transfer (4.3.1), deserves comment here because it is subject to dual categorizations: it is both a metaphorically based extension and an inference-based one. Since this class involves a metaphorical extension, thematic structure is isomorphic to that of the applicative construction, as in the metaphorically

based extensions discussed in section 4.2. As per the Invariance Hypothesis, predications which denote metaphorical transfer preserve the thematic and linking constraints associated with the (trivalent) applicative construction: they entail an agent, a nonoblique goal and a (canonically null-instantiated) theme. However, this metaphorical extension is based upon a prototypical rather than necessary component of the coverage schema: transfer. For this reason, the coverage entailment which plays a role in other metaphorical uses of the applicative pattern plays no role here. The remaining pragmatically based extensions discussed in this section are nonmetaphorical. They are based solely on marginal implications of the applicative pattern, and do not partake directly of the semantics of location or transfer. These extensions thereby lack the thematic and linking constraints associated with the applicative pattern. These extensions meet only the valency and morphological conditions on applicatives: they are bivalent and thereby compatible with the transitive linking construction described in Michaelis & Ruppenhofer (in press).

4.3.1 Communication and affecting as transfer

Applicative predications may describe situations in which metaphorical objects are transferred to a goal or recipient. This sense can be viewed as an extension of the meaning of the trivalent *be*-pattern, in which saturation comes about through transfer of a concrete theme onto a location, e.g. *behängen* '*be*-hang', *beladen* '*be*-load', *bedecken* '*be*-cover'. In its metaphorical transfer sense, however, the *be*-construction does not entail saturation; transfer is the sole entailment. One kind of metaphorical theme is an idea. Via the IDEAS ARE TRANSFERABLE OBJECTS metaphor and the CONDUIT metaphor of communication (Reddy 1979), the *be*-construction can be used to describe communicative events. The agent is a person delivering the idea, the idea is the theme, and the recipient is the goal. The *be*-construction evokes this metaphor in the following denominal example:

(63) Message ID ⟨22D3C5E8H000002AFH@p-alv.wds.mcnet.de⟩
Er hatte niemals daran gedacht, sie zu fragen oder sie auch nur zu **benachrichtigen**, daß er Clarisse für verschwunden hielt.
'He had never remembered to ask her or to even inform her (lit. news) her that he believed Clarisse to have disappeared.'

The metaphor is made explicit in a paraphrase of (63), sentence (64):

(64) [. . .] oder ihnen auch nur Nachricht darüber zu geben, daß er [. . .].
'[. . .]or to just give them news about the fact that he [. . .]'

Another metaphorical link to the domain of transfer is provided by the EFFECTS ARE TRANSFERRED OBJECTS metaphor (Goldberg 1995: Ch. 6). Consider the following denominal example:

(65) WKB/TZ1.00567, taz (Sonderheft 1 und 2), Nach Polen und Ungarn ...
Versuchte die Partei mit ihrem anfänglichen unverbindlichen Dialogangebot vergeblich, den demonstrativen Unmut der Bevölkerung einzudämmen, so hofft sie jetzt, die Konflikte am runden Tisch zu kanalisieren und das Volk zu **befrieden**.
'If the party tried in vain to contain the ostentatious ill humor of the population with their initially non-binding offer of a dialog, it is now hoping to channel the conflicts at the round table and to bring peace to (lit. peace) the people.'

In this example, the source nominal (*Friede*) denotes a transferable effect. Transferable effects include properties, as expressed by deadjectival applicative predications like (66) (= (5)):

(66) Die Polizei **befreite** die Geiseln.
'The police freed the hostages.'

These denominal and deadjectival applicative verbs lack base forms. Therefore, it is plausible to assume that their meanings come from the integration of constructional and lexical semantics via the elaboration relation, in much the same way that a transfer implication attaches to denominal applicatives which express coverage of a surface, e.g. *besohlen* ('be-sole') and *beschildern* ('be-signpost'). In both the literal (coverage) cases and the metaphorical cases in (65)–(66), the lexical item which unifies with the construction is construed as a transfer verb via the override principle, and the oblique theme is null instantiated owing to its recoverability. The examples in (67)–(68) show that the transfer of abstract effects is a special case of a general model in which effects of all kinds, including physical ones, are transferable from an agent onto a patient-goal:

(67) Message ID ⟨782aug$gr5$1@infosun2.rus.uni-stuttgart.de⟩
Jeder will dem Gegner so schnell wie möglich eine tiefe blutende Wunde beibringen, ihn 'abstechen', wie es im Jargon der schlagenden Verbindungen heißt.
'Each wants to bring the opponent a deep bleeding wound as fast he can, that is 'stick' him, as they say in the jargon of dueling fraternities.'

(68) Message ID ⟨4tskos$n4m@ra.ibr.cs.tu-bs.de⟩
Schaden können diese Bücher einem nicht zufügen.
'These books can't do any harm (lit. add harm) to people.'

4.3.2 *Iteration*

Iteration is a frequent concomitant of concrete uses of the central sense. We saw that predications involving saturation typically involve multiple instances of a given action. For example, predications involving *beladen* ('be-load') often express scenarios in which many items are loaded in succession. However, the notion of iteration can also be expressed by *be-* verbs independently of the transfer or saturation implications. Example (69) illustrates this:

(69) 8805296:
Es kann nicht angehen, daß auch auf kommunaler Ebene Wahlbeamte schon mit vierzig eine Pension **beziehen**.
'It cannot be the case that even on the municipal level elected officals be-draw a pension already at the age of 40.'

This examples illustrates the use of the verb *ziehen* ('pull, draw') in the applicative pattern to denote regular reception of goods or funds (as when one subscribes to a newspaper or receives retirement income). Example (70) presents another case in which an applicative predication prominently expresses iteration:

(70) MMM/912.44101: Mannheimer Morgen, 03.12.1989, Sonstiges
Puppen aus Porzellan mit echtem Lockenkopf und zarten Sommersprösschen gehören für 700 Mark in jede Schicky-Micky-Kinderstube, zumindest eine Käthe-Kruse, trotz des bäuerlichen Gesichtsausdruck ein Prestige-Objekt für höhere Töchter muß her, obgleich vielleicht eine kitschige Barbie im überladenen Nylon-Abendkleid viel mehr geliebt und **bespielt** wird.
'For 700 marks porcelain dolls with real curly hair and delicate freckles should be part of every fancy-shmancy playroom; for daughters of the upper-class it has to be at least a Kaethe Kruse—an object of prestige in spite of the rustic physiognomy—although a kitschy Barbie doll in a pretentious nylon evening dress might be loved and played with (lit. played) much more.'

In example (70) the predication containing *bespielen* does not entail that a given doll might become worn out and ragged as a result of playing. It is also difficult to detect a coverage implication here, since a doll is not a surface which one can cover by means of playing, as in the predication containing *bespielen* in (76) below. Instead, what is relevant is the frequency with which the child is likely to play with the Barbie doll. Examples like (70) illustrate the circumstances under which the iteration implication—otherwise a happenstance concomitant of the coverage implication con-

ventionally associated with the applicative pattern—comes to be the sole implication expressed by the *be*-pattern. For example, the iteration implication is the sole feature responsible for contrast pairs like *hindern* ('stop, prevent') vs. *behindern* ('hinder').

By assuming an iteration use of the *be*-pattern, we account for a usage of the verb *befahren* which otherwise appears to violate a robust constraint on the applicative pattern: the location must be two-dimensional (see section 3.5). Use of *befahren* to describe car travel appears to violate the planar-location constraint, because the locative argument (the roadway) is a one-dimensional rather than two-dimensional location. Example (71) illustrates this usage:

(71) Hans **befährt** diese Strasse täglich.
'Hans drives this street every day.'

The use in (71) is unexpected because it invokes a construal distinct from that associated with the applicative predication involving the sailor and the Baltic Sea in (41) above: in (71) there is no two-dimensional location for the driver (and vehicle) to thoroughly cover. The applicative predication in this example certainly does not lead one to construct a scenario in which a driver is 'covering' the road by swerving her car to the left and right. Nor is there any notion that the driver is driving with particular intensity. Similarly, it is not implied that the road is affected more heavily by *be*-driving than by some other kind of driving. Rather what is crucial for the use of *befahren* in example (71) is that driving represents an iterated activity.[15] One may, for instance, *be*-drive a particular road to work every day. That iteration is crucial to the use of *befahren* to describe car travel is suggested by fact that the majority of German speakers whom we consulted appear to have a strong preference for (72) over (73):

(72) ??Ich befahre heute die A3.
'I'll take/drive on highway A3 today.'
(73) Ich fahre heute die A3.
'I'll take/drive on highway A3 today.'

[15] There is, however, a use of *befahren* which lacks the iteration implication. It is found primarily in reports on traffic accidents which specify the direction in which the driver was driving on the road traveled. An example of this usage is the following:

4321018
Einem Bad Nauheimer Autofahrer, der am Freitag gegen 14.40 Uhr die Wetteraustraße in Dorheim in Richtung Wölfersheim befuhr, lief ein achtjähriges Mädchen direkt vor den Wagen.
'An 8-year old girl ran right in front of the car of a driver from Bad Nauheim who was driving Wetteraustreet in Dorheim towards Wölfersheim.'

The relationship between verb semantics and construction semantics in examples like (69)–(70) appears to be that of elaboration, since the verb and the construction are each bivalent. In the case of (70), for example, the player and the 'instrument' roles assigned by the verb map to the agent and theme roles assigned by (this sense of) the construction. The elaboration relation is identified when the verb is a more specific instance of the event type designated by the construction. Does this characterization apply to the iteration usage? The applicative construction designates a sequence of iterated events, whereas the verb *spielen* e.g. does not denote a sequence of iterated playing events. However, insofar as the verb denotes the event type which is replicated in the constructional semantics, we can identify an elaboration relation in this case.

4.3.3 Intensification

Numerous *be*-predications share the notion of intensive action but do not involve coverage of any surface. This intensification sense may be attributed to a pragmatic inference of the following kind. Many *be*-predications entail repetition of subevents. The repetition of subevents is evidence that the activity is carried out with greater intensity than in the case of comparable isolated events. While we lack diachronic evidence for a path of grammaticalization along these lines, it is plausible in the light of other findings. For instance, Regier (1994), in a typological study of the semantics of reduplication, links the INTENSITY-sense of reduplication to the PLURALITY-sense, which in turn is linked to the claimed central sense, REPETITION. Applicative predications which denote intensive action are given in (74)–(75):

(74) Man kann Schädlinge ohne Einsatz von chemischen Giften **bekämpfen**.
'It is possible to fight pests without the use of chemical poisons.'

(75) Die Demonstranten **beschimpften** die Polizisten.
'The protesters verbally abused the policemen.'

The verb *bekämpfen*, exemplified in (74), differs from *kämpfen* 'fight' in that predications containing the former verb necessarily describe active combat. While the type of action that *bekämpfen* expresses involves repeated engagements, the iteration notion is not by itself sufficient to warrant the use of this verb: an event involving a series of defensive battles could not be described by this verb. By the same token, one cannot relate the meaning of *beschimpfen* ('verbally abuse') in (75) to that of *schimpfen* ('scold') by adding an iteration implication to the latter verb, since an event of verbal abuse

does not consist of repeated scoldings. The meanings of *beschimpfen* and *schimpfen* can, however, be related on a scale of intensity for actions. Thus, although intensity and iteration are frequently inseparable, an applicative predication may imply intensive action alone. The relation between the verb and (this usage of) the applicative construction is again that of elaboration: the verb is a subtype of the situation type denoted by the construction. The situation type denoted by the construction corresponds to an extreme point on a scale for eventualities.

4.3.4 Affectedness

One can define affectedness as a change of physical or mental state which is (potentially or actually) effected by some action. A location is potentially affected by the theme's movement across it, as in (76):

(76) MMM/507.07898: Mannheimer Morgen, 14.07.1995, Lokales
Die Frage, ob der Mundenheimer Platz **bespielbar** ist, wird künftig der Platzwartentscheiden.
'The question of whether the Mundenheimer Field is playable will in future be decided by the groundsman.'

Affectedness is a frequent concomitant of saturation: damage to the soccer field results from the players' sequential or summary coverage of the field. We contend that this implication is the basis for a pragmatically based extension of the applicative pattern in which only affecting and not coverage is entailed. Predications which exemplify this usage express the means by which the effect is achieved, as in the nonce formation in (77):

(77) Süddeutsche Zeitung, May 27, 1995
[. . .] und während einem die heißen Rhythmen der kubanischen Musik in die Glieder fahren, strömen lächelnde Mädchen, zweifelsfrei Sendboten eines fernen Planeten der Freude, in die graue Welt, von vorne, von hinten, von den Seiten, angetan mit Flitter und Tand, mit Federbüschen und Riesenblumen, mit Durchsichtigem und Undurchsichtigem, und sie **betanzen** dich, behexen dich, verwirren dich, machen dir warm ums Herz [. . .].
'And while the hot rhythms of Cuban music get to you, smiling girls–undoubtedly messengers of a far away planet of joy—stream into the gray world from all sides, clad in tinsel and finery, plumes and giant flowers, in transparent and nontransparent clothes, and they dance you, bewitch you, confuse you, make you feel hot.'

In addition, most speech-act verbs can be used in the applicative pattern to denote a means of annoying the recipient:

(78) Süddeutsche Zeitung , November 28, 1992
HEADLINE: Die Leute wollen sich nicht **belabern** lassen. N-tv-Geschäftsführer. Karl-Ulrich Kuhlo über die Chancen seines Nachrichtenprogramms [. . .].
'HEADLINE: People don't want to be blathered. N-tv executive Karl-Ulrich Kuhlo about the prospects for his news channel.'

These uses of speech-act verbs are not based upon a metaphorical mapping whose source domain involves saturation or coverage, e.g. the SPEECH IS TRAVEL ACROSS A TOPIC metaphor. Instead, speech-act verbs in examples like (78) express the means by which an effect is achieved. While in (77) this effect is unintended, the effect may also be an intended one, as in (79):

(79) Message ID ⟨3779D77E.EC802A73@fh-konstanz.de⟩
Meistens muß man den selber einbauen. Außer du bist sehr gut im Leute **bequatschen**.
'In most cases you have to install it yourself. Except if you're very good at persuading (lit. talking) people.'

Applicative verbs of domestic and culinary activity also frequently express the means by which a (beneficial) effect is achieved. Sentence (80) (a response to an on-line personals ad) exemplifies this usage of the applicative for the verbs *kochen* ('cook') and *putzen* ('clean'):

(80) Message ID ⟨35666380.12664736@news.netway.at⟩
Und wenn Du [. . .] arbeitest, mir das Geld ins Haus trägst, mach' ich die Kinder [. . .], mach' ich den Haushalt, **bekoch'** dich [. . .], **beputz'** Dich (waschen mußt' Dich selber), und halt' Dir die Kinder vom Leib.
'And if you work [. . .] and bring the money home, then I'll take care of the kids, I'll take care of the house, I'll cook [for] you, clean [for] you (you have to wash yourself yourself), and keep the kids out of your way.'

The applicative construction denoting effects may be combined with the oblique-theme construction, resulting in valence augmentation, if the added theme is construable as an instrument, as in (81):

(81) Message ID ⟨36969A47.ADA335Co@gmx.net⟩
Ich habe sogar vor, meine Wohnebene (Uni) am Wochenende als Versuchskaninchen zu benutzen. Ich habe schon Tage lang nach einem guten Rezept gesucht, mit dem ich meine Mitstudenten am Wochenende **bekochen** kann.

'I am even planning on using the people on my floor (college dormitory) as guinea pigs. I have been looking for days now for a good recipe with which I can cook [for] my fellow students over the weekend.'

The affectedness implication associated with applicative sentences like (80)–(81) is typically associated either with an iteration implication, as when habitual beneficial activity is denoted (80), or a coverage implication, as when a bounded set of individuals is serviced (81). The affectedness, coverage and iteration implications may be present simultaneously, as in (82):

(82) http: //www.tagesspiegel.de/ressorts/portrait/B/BONA400.HTM
Täglich holen einige Obdachlose aus der Teestube frische Brötchen und Kuchen in der Bäckerei ab. 60–80 Menschen zu **bebacken**, kostet Bonau und seine Mitarbeiter am Tag eine gute Viertelstunde Arbeit.
'Every day some homeless people from the tea room pick up fresh rolls and cake in the bakery. To bake [for] 60–80 people takes Bonau and his employees fifteen minutes of work per day.'

In (82), a coverage interpretation is possible because the group of beneficiaries, via its cardinality, 'measures out' the baking event—this event is completed when all of the individuals in the group are provided for. Since the event (as described) is iterated daily, the iteration implication is present here as well. That numerous implications of the applicative pattern may be simultaneously present is to be expected under the present analysis, since all of these implications constitute components of the coverage schema.

4.3.5 Act in a particular capacity toward someone

This small group of denominal *be*-verbs includes *bemuttern* (< *Mutter* 'mother'), *bewirten* (< *Wirt* 'host'), *bespitzeln* (< *Spitzel* 'spy'). Examples are given in (83)–(84):

(83) Message ID ⟨slrn6sf8ab.61.bones@castle.aball.de⟩
Männer möchten auch zuweilen dominiert (**bemuttert**) werden, dann brauchen sie nämlich auch nur zu empfangen und sind jeglicher Verantwortung (und Konsequenzen) enthoben.
'At times, men want to be dominated (mothered) too. For then they only have to receive and they are relieved of any responsibility (and consequences).'

(84) http: //www.phil.uni-passau.de/dlwg/ws07/12-1-97.txt
[D]er Fall machte um so mehr Aufsehen, als die junge, offenbar übernervöse Musikerin von der Kaiserin Maria Theresia **begönnert** wurde.

'The case drew all the more attention since the young, apparently hyper-nervous musician was patronized by the empress Maria Theresia.'

These verbs differ from other denominal *be*-verbs in an important respect: the source nominal does not express the type of the theme argument, as it does in the case of applicative verbs with literal transfer semantics, e.g. *beschildern* ('be-sign') or in the case of applicative verbs which evoke the effects-as-transferred-objects metaphor, e.g. *befrieden* ('be-peace'). Instead, the nominal base in examples (83)–(84) expresses the type of role assumed by the AGENT of the event. The agent's assumption of this role is a precondition upon the agent's achieving a particular effect upon the beneficiary. Therefore, we view this usage as inductively related to the affectedness usage discussed in section 4.3.4: an agent may affect a beneficiary by assuming a particular role relative to that individual. This fairly weak inductive relationship is expressed by a semantic-extension link labeled *means* in Figure 4. This use of the term *means* is distinct from that in which the term refers to a particular verb-construction integration relation. The verb-construction integration relation which we assume for *bemuttern* and other applicatives of this class is the instance relation. As in the case of denominals like *beschildern*, we postulate a type-shifting effect in which the base nominal receives a valence set via unification with the applicative construction. The arguments in the valence set of the applicative construction fuse with the corresponding participant roles in the frame semantics of the particular noun. In the case of *bemuttern*, for example, these participant roles are the mother and the child. These frame-specific roles fuse with the corresponding roles licensed by the (bivalent) applicative construction. In accordance with our general treatment of denominal applicatives, we reject the view that the base noun, e.g. *Mutter*, 'denotes' a particular participant in the event expressed by the predication, in this case an agent. Instead, the source nominal denotes a type, permitting omission of the agent argument where type information is sufficient, as in (83).

4.4 *Historical evidence*

The most plausible source for the semantics of coverage associated with the *be*-pattern is the 'around' schema associated with the historic precursor of *be*, the preposition *bi*. The modern English and German prepositions meaning 'around'—*around* and *um/herum*, respectively—may be used to express both the concept of 'surrounding an enclosed space' and that of 'being distributed over a surface area'. Consider the following data:

(85) Die Spieler versammelten sich **um** den Trainer.
'The players gathered **around** the coach.'
(86) Die Spieler standen auf dem Platz **herum** und warteten auf den Schlußpfiff.
'The players were standing **around** the pitch waiting for the final whistle.'
(87) Die Abwehrspieler liefen orientierungslos auf dem Platz **herum**.
'The defense were running **around** the pitch disoriented.'

In (85) we see that *um/herum* can denote a static surrounding configuration. In (86) we see that *um/herum* can denote a static configuration involving coverage of a surface by multiple points. In (87) we see that the coverage scene expressed by *um/herum*, like that expressed by English *around*, is consistent with a dynamic scene in which a trajector covers a surface over the course of time. The prefix *be-* had the set of senses that *um/herum* and *around* display in (85)–(87) through Grimm's time; Grimm lists Latin *circum* as the first sense for the *be*-prefix. But, as Ruppenhofer (1999) showed, *be*-verbs exemplifying the surrounding usage seen in (85) were already being lost in Grimm's time and continued to be lost thereafter. Among these lost verbs were, for instance, *bearmen* 'embrace', *bezäunen* 'fence in', and *behüllen* 'surround'. Only a small number of *be*-verbs which denote surrounding or containment remain. Among these verbs is *beherbergen* 'shelter, harbor', exemplified in (88):

(88) Das Museum **beherbergt** geschmackvolles Geschirr und Porzellan-Zierat.
'The museum harbors tasteful dishes and porcelain ornaments.'

The surrounding class might be regarded as a low-productivity verb cluster associated with the applicative pattern. However, we chose to omit the enclosure usage from our semantic analysis of the applicative pattern because the *be*-verbs which continue the semantics of enclosure do not share the linking properties of the applicative pattern. For example, the subject of (active voice) *beherbergen* is a location rather than a theme (as in (88)).

By delineating the various entailments of the enclosure sense, we can understand not only the development of the coverage sense of *be-* but also the development of a PROXIMITY meaning which continues in the non-bound preposition *bei* and, like the surrounding sense, is preserved in a few *be*-verbs. Following Grimm & Grimm (1854: 1203), we treat the proximity meaning as having arisen by metonymy from the 'surrounding'-sense: what is in the vicinity of an object is close to it. An explanation along these lines is plausible since, for instance, the English preposition *around* has uses with the same implication of proximity, e.g. *John likes to be around his family*. The same is true for the Modern German preposition *um*, which also can be used

in sentences like *Er hat seine Familie gerne um sich* ('He likes to have his family around him'), where closeness to the theme or location rather than surrounding or enclosure of the theme is involved. *Be*-verbs which might be viewed as preserving the proximity semantics of the prefix are *bekommen* ('get, obtain'), *belangen* ('sue, prosecute'), *besteigen* ('mount, climb, climb into'), and *betreten* ('enter'), all of which are attested with such meanings in Middle High German (Lexer 1872). Literal glosses, which express the semantic contribution of the prefix, are, respectively: 'come upon' (as in the English verb *come by*, meaning 'to obtain'), 'reach toward', 'ascend to', and 'step onto'. Another class of verbs which appears to preserve the proximity-denoting sense of the prefix are statives which denote scenes in which a theme remains in place. Included in this class are: *behalten*, 'keep' (lit. 'hold near'); *belassen*, 'leave in place' (lit. 'leave by a place'), *beruhen*, 'be based on' (lit. 'rest on'); and *bestehen*, 'exist, insist' (lit. 'stand by a place').

By treating proximity, enclosure and coverage as related concepts, we can account for a layering effect observable within the class of *be*-verbs: while the majority of *be*-verbs (and the totality of coinages in our corpus data) invoke the coverage component, certain small classes continue meanings associated with other components of the schema. As shown by the examples involving English and German *um/herum*, the patterns of semantic extension proposed both here and by Grimm for the *be*-prefix are plausible. These patterns collectively define a continuum of idiomaticity in the modern language: some instances of the applicative pattern represent transparent combinations of constructional and verbal semantics whereas others cannot be related to the semantic schema which makes the construction productive, i.e. the coverage schema.

Our proposal that the 'coverage' sense of the applicative pattern is the prototypical usage receives support not only from the fact that this class has the highest type frequency in our corpus (see Ruppenhofer & Michaelis in press: Appendix), but also from observations about the patterns of loss and innovation within the class of *be*-verbs over the last 200 years. For instance, a once sizeable class of verbs with removal semantics has lost all of its members, with the exception of the idiomatic verbs of theft discussed earlier. No new removal verbs have been innovated outside of the small theft subclass. By contrast, *be*-verbs with concrete coverage meanings have been innovated in great number. Examples include *bespiken*, put spikes onto [e.g. tires of motocross bikes]', *bestrahlen* 'illuminate; irradiate [e.g. food]', *beampeln* 'put up traffic lights [e.g. at intersections]'. Although the coverage class has lost members as well, these losses are piecemeal and appear to be due to lexical obsolescence (e.g. *beleitern* 'put ladders down mining shafts [for access]', *bezetteln* 'put little pieces of paper on [as labels]', *belehnen* 'invest with a fiefdom', *befrohnen* 'impose corvée on').

5 CONCLUSION

We have argued that semantic licensing effects associated with the applicative pattern can be attributed to the event type denoted by this pattern. Since a syntactic pattern can denote in the way that a word denotes—via convention—it makes sense that an argument-structure pattern should, like a polysemous word, denote an associative network of senses of the type discussed here. Along with Bybee *et al.* (1994), we adopt the view that the semantic substance associated with a given formative is the accretion of a series of diachronic developments. Like these authors, we see the diachronic dimension as greatly increasing the explanatory power of semantic theory. As they point out, one cannot explain the existence of a particular construction by showing that it has a particular function or functions; one must also explain how that construction developed its functions (p. 3). Describing the relevant patterns of semantic extension is a coherent enterprise only if one assumes a sign-based semantics for constructions. In accordance with Goldberg (1995), we maintain that to admit 'top-down' or syntactic meaning does not conflict with the goal of providing a compositional theory of sentence semantics: on the constructional account, sentence interpretation involves the reconciliation of verb meaning and construction meaning—a process whose net effect is an increase in the semantic potentials of verbs.

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