Idioms and Support Verb Constructions in HPSG

Gregor Erbach[†] Brigitte Krenn[*]

Universität des Saarlandes
Computational Linguistics
Im Stadtwald
6600 Saarbrücken
e-mail: {erbach,krenn}@coli.uni-sb.de

Abstract

This paper presents a description and analysis of two kinds of collocational phenomena of German: idioms and support verb constructions (Funktionsverbgefüge). In the first part of the paper, a characterization of idioms, support verb constructions and "compositional collocations" is given, and syntactic and semantic properties of idioms and support verb constructions are described. Then we discuss how idioms and support verb constructions, which require the combination of specific lexical items, can be handled in HPSG. The following section is concerned with the semantics of idioms. We distinguish unanalyzable and metaphorical idioms and propose a representation for the former. We modify the Quantifier Inheritance Principle of HPSG to avoid quantification over "frozen complements" of idioms. In the last part, we discuss the argument structure, syntax and semantics of support verb constructions, and the possibilities for internal modification and quantification. A representation for causative and non-causative support verb constructions is given.

1 Introduction

A collocation — in the wide sense — is a co-occurrence of words which cannot be characterized by structural rules alone, but is constituted by the presence of particular lexical items. Therefore, collocations are generally considered as lexical phenomena. We distinguish three classes of collocational phenomena: idioms, support verb constructions and "compositional collocations." The boundary lines between idioms, support verb constructions, and compositional collocations are not very clear-cut, and there are numerous expressions that fall in between these classes. The following definitions cover prototypical instances of each of these classes, and provide reference points against which other instances, that fall in between these reference points, can be compared.

Idioms

There are two conflicting views concerning the semantics of idioms: The traditional, "non-compositional view" claims that the meaning of an idiom is not derived from the meanings of its parts; while the "compositional view" claims that the "parts of an idiom should be

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assigned meanings, contributing to the meaning of the whole idiom" (Wasow et al. 1982). We think that both views are justified because there are some idioms which can only be analyzed in a non-compositional way, and others, where a meaning should be assigned to parts of the idiom because the parts can be modified or used referentially. In many cases, both views can be applied to the same idiom. When it becomes necessary to distinguish the two classes, we will refer to the former as unanalyzable idioms, and to the latter as metaphorical idioms, following the terminology established by Wood (1986).

The following definition characterizes unanalyzable idioms:[1] Unanalyzable idioms are multiple-word expressions the meaning of which is a property of the whole expression, and not the combination of the meanings of its constituent words.[2] Some examples are given below.

(1) klipp und klar
(clip and clear, clearly)

(2) den Löffel abgeben
(the spoon away-give, to kick the bucket)

(3) ins Gras beißen
(into the grass bite, to bite the dust)

(4) wissen, wo der Bartel den Most holt
(know where the Bartel the cider fetches, to be in the know)

Metaphorical idioms differ from unanalyzable idioms in that a meaning can and should be assigned to their constituents. One reason is that metaphorical expressions like *in den sauren Apfel beissen* (to perform an unpleasant task) are generally understood by making a connection between the unpleasant task and the sour apple, and between performing and biting. Therefore, the parts of the idiom can be used referentially, for example by quantification or modification.[3] On the other hand, unanalyzable idioms like *den Löffel abgeben* can be assigned a meaning directly, and no semantic connection to *Löffel* or *abgeben* must be made. While general metaphorical concepts like "argument as war" (5a) or "information as substance" (5b) (Lakoff and Johnson 1980) are widely used and very productive, metaphorical idioms require the presence of particular lexical items, as illustrated in examples (6) to (8).

(5) a. eine Behauptung/Äußerung/Standpunkt/... angreifen
(a claim/an utterance/a point of view/... attack,
to attack a claim/an utterance/a point of view/...)

b. eine Information/Auskunft/Bericht/... zurückhalten
(an information/an information/a report/... hold back,
to hold back an information/an information/a report/...)

(6) a. die Katze aus dem Sack lassen
(the cat out of the sack let, to reveal some information)

[1] The term *unanalyzable idiom* is somewhat unfortunate because even these idioms can usually be analyzed as metaphors or metonymies. However, such analysis is not needed for using or understanding the idiom.

[2] This definition is based on a definition given by Erik-Jan van der Linden (1989, p. 134). We define idioms as multiple-word expressions rather than multi-lexemic expressions, because we consider both single words and at least unanalyzable idioms as lexemes.

[3] Unlike unanalyzable idioms, the modification of metaphorical idioms does not affect the entire expression and internal modification is not restricted to a metalevel modification, such as *in den sprichwörtlichen sauren Apfel beissen* (to bite into the proverbial sour apple). However, there are also restrictions on the modifiability of metaphorical idioms (cf. section 2).

b. Jetzt ist die Katze aus dem Sack.
(Now is the cat out of the sack.
Now the information has been revealed.)

(7) a. jemanden aufs Glatteis führen
(s.b. onto slippery ice lead, to lead s.b. onto tricky ground)

b. jemanden aufs diplomatische Glatteis führen
(s.b. onto the diplomatic slippery ice lead,
to lead s.b. onto diplomatic tricky ground)

(8) a. in den sauren Apfel beißen
(into the sour apple bite, to perform an unpleasant task)

b. In diesen sauren Apfel mußt Du beißen.
(Into this sour apple must you bite.
You must perform this unpleasant task.)

Support-Verb Constructions (Funktionsverbgefüge)

Support verb constructions[4] typically consist of a relational noun, i.e. a noun with an argument structure (predicative noun), which contributes the semantic relation of the expression, and a semantically deprived support verb, which contributes, at least, tense and causativity. The Aktionsart and argument structure of the support verb construction as a whole depend on both the predicative noun and the support verb.[5] On one hand, the support verb construction as a whole functions as a predicate, on the other hand it is syntactically complex. Examples of support verb constructions are given in (9) to (12).

(9) Angst haben/bekommen/verlieren/machen/nehmen
(fear have/get/lose/make/take,
to be afraid/to get frightened/ not to be frightened any more/to frighten somebody/to dispel fears)

(10) einen Beschluß fassen
(a resolution grasp, to pass a resolution)

(11) in Gang kommen/bringen
(in gait/movement come/bring, to get started, to start)

(12) eine Entwicklung nehmen
(a development take, to develop)

Compositional Collocations

In the literature, this class is often referred to only as collocations. We call them "compositional collocations" in order to distinguish them from the collocational phenomena listed above. In contrast to idioms and support verb constructions, the meaning of a "compositional collocation" is derived by the usual compositional semantic functions from the meanings of its constituents. Compositional collocations differ from so-called free word combinations through an increased probability of co-occurrence of the collocation partners.

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[4] This class is also referred to in the literature as light verb constructions or function verb constructions. In the absence of a generally accepted terminology, we follow the French usage in calling them support verb constructions (fr.: phrase à verbe support), and their major components support verb (fr.: verbe support) and predicative noun (fr.: nom prédicatif).

[5] For a detailed discussion of the German literature on support verb constructions see Mesli (1989, 1991).

(13) eingefleischter[6] Junggeselle
(confirmed bachelor)

(14) diebische Elster
(thieving magpie)

(15) Hut aufsetzen
(to put on a hat)

(16) Hemd anziehen
(to put on a shirt)

In this paper we will not discuss "compositional collocations" any further because they exhibit regular syntactic and semantic behavior, and pose no problem for a theory of grammatical competence.

As we have pointed out at the beginning of the section, a number of expressions cannot be assigned clearly to one of these classes: the expression *in Frage stellen* (into question put, to doubt) could be considered as a support verb construction or as an idiom; it needs to be explained why *Fragen stellen* is a support verb construction while *Fragen beantworten* is a compositional collocation; the expression *Brücken schlagen* may be considered as idiomatic or as compositional. The same is true of the distinction between unanalyzable and metaphorical idioms; for example, the expression *sich den Kopf zerbrechen* could be treated both ways.

2 Idioms

While unanalyzable idioms are diachronically often derived from metaphors, a metaphorical interpretation of unanalyzable idioms is no longer possible, and their meaning must be listed in the lexicon. In the case of metaphorical idioms, where each part must be assigned a (metaphorical) meaning, either the meanings of the parts must be listed in the lexicon or specific metaphorization rules have to be stated in the grammar. In the following we will describe some of the syntactic properties of idioms, such as passivization and modification.

Some idioms are completely fixed; they do not allow for syntactic variation or internal modification, as illustrated in the following examples.[7]

(17) a. klipp und klar
(clip and clear, clearly)
b. #klipp und besonders klar
(clip and especially clear)
c. #klar und klipp
(clear and clip)
d. ganz klipp und klar
(very clip and clear)

(18) a. fix und fertig
(quick and ready, worn out)
b. #fix und schon fertig
(quick and already ready)

[6] Note that *eingefleischt* only occurs in an adjectival form.
[7] The # sign means that the string does not have an idiomatic reading.

c. #fertig und fix
(ready and quick)

d. völlig fix und fertig
(totally quick and ready, totally worn out)

(19) a. auf jeden Fall
(at any case, at any rate)

b. #auf jeden besonderen Fall
(at any special case, by every special case)

The majority of idioms, however, allow for considerably more flexibility, for example the idiom *die Leviten lesen*. The idiom consists of the verbal head *lesen* and the "frozen" complement *die Leviten*, which need not be adjacent, as illustrated in the verb-second sentence (20).

(20) Peter liest Paul die Leviten.
(Peter reads Paul the Leviticus. Peter lectures Paul.)

Most idioms headed by a verb can undergo passivization, but there are some cases where the idiomatic meaning is lost in the passive (e.g. *den Löffel abgeben*).

(21) Die Leviten wurden Paul gelesen. *idiomatic*
(The Leviticus was Paul read. Paul was lectured.)

(22) a. Peter macht Paul den Garaus. *idiomatic*
(Peter makes Paul the Garaus. Peter finishes Paul off.)

b. Der Garaus wird Paul gemacht. *idiomatic*
(The Garaus is Paul made. Paul is finished.)

(23) a. Fritz gibt den Löffel ab. *literal and idiomatic*
(Fritz gives the spoon away.
Fritz hands over his spoon. *literal*
Fritz kicks the bucket. *idiomatic*)

b. #Der Löffel wurde von Fritz abgegeben. *only literal*
(The spoon was by Fritz away-given.
The spoon was handed over by Fritz.)

If the "frozen" complement in unanalyzable idioms is modified, except by a metalinguistic comment, as shown in example (24), in almost all cases the idiomatic reading is lost, and only the literal (non-idiomatic, compositional) reading is possible, see (25). In case of examples (24a and b) the modification serves as a comment that the sentence is indeed used idiomatically.

(24) a. Er gab den sprichwörtlichen Löffel ab.
(He handed over the proverbial spoon.
He kicked the proverbial bucket.)

b. Er weiß, wo der Bartel den sprichwörtlichen Most holt.
(He knows, where the Bartel the proverbial cider fetches.
He is in the know.)

(25) #Paul gab den komischen Löffel ab. *only literal*
(Paul handed over the funny spoon.)

(26) #wissen, wo der Bartel den sauren Most holt
(know where the Bartel the cider fetches, to be in the know)

On the contrary, modification of the "frozen" complement in metaphorical idioms does not necessarily change the expression's metaphorical character; see for instance examples (27) and (28).

(27) a. Paul macht große Augen. *idiomatic*
(Paul makes big eyes. Paul is staring.)

b. Paul macht ganz große Augen. *idiomatic*
(Paul makes very big eyes.)

(28) a. Paul zerbricht sich seinen Kopf.
(Paul breaks himself his head.
Paul racks his brains.)

b. Paul zerbricht sich seinen nicht besonders klugen Kopf.
(Paul breaks himself his not so clever head.
Paul racks his not particularly clever brains.)

There are some idioms, in which the "frozen" complement must be modified. The idiomatic reading is lost without the modification.

(29) a. Er macht ihr schöne Augen.
(He makes her beautiful eyes.
He makes eyes at her.)

b. #Er macht ihr Augen.
(He makes her eyes.)

While the "frozen" complements involved in metaphorical idioms can usually be taken up again by pronominalization (30), the same is not true for unanalyzable idioms (31).

(30) Paul ist heute in jedes Fettnäpfchen getreten, und wird morgen wieder in eines treten.
(Paul is today in every grease pot stepped, and will tomorrow again in one step.
Paul kept dropping bricks today, and will do the same tomorrow.)

(31) #Das Gras, in das er gebissen hat, war grün.
(The grass in which he bitten had was green.
The grass he bit in was green.)

As the above examples illustrate, a formal theory of grammar must account for the variation in syntactic flexibility of different idiomatic expressions, and the major characteristic of the semantics of idioms, which is that idioms are meaningful linguistic units whose meaning is not computed by the usual functions for combining the meanings of constituent words.[8] In other words, while (unanalyzable) idioms can be analyzed syntactically, they cannot be fully decomposed semantically. The meaning of *den Löffel abgeben* is not derivable by the usual compositional semantic functions from the usual meanings of *den, Löffel* and *abgeben*.

[8] As Zadrozny (1992) has proven, it is possible to formalize any semantics as a compositional semantics, so that claims about non-compositional semantics of idioms become vacuous. Further research into compositional meaning functions is necessary in order to arrive at a more formal definition of "usual function."

3 Support-Verb Constructions

As already mentioned, support verb constructions typically consist of a predicative noun — that is a noun which has an argument structure — and a semantically deprived support verb. Together they form a predicate, whose semantic relation is determined by the predicative noun, while the support verb contributes, at least, information about tense and causativity. The argument structure and Aktionsart of the support verb construction depend both on the predicative noun and the support verb.

A number of support verb constructions can paraphrase main verbs or adjective-copula constructions and express different stages of processes which cannot be expressed by main verbs or adjective-copula constructions alone. Some support verb constructions can paraphrase passives.[9]

(32) in Blüte stehen (= blühen)
(in bloom stand, to be in blossom)

(33) zur Aufführung bringen (= aufführen)
(to performance bring, to perform)

Examples (32) and (33) illustrate the relation between the support verb construction and the main verb underlying the predicative noun. The meaning and the argument structure of the predicative noun are derived from the main verb; the predicative noun together with the support verb functions like the underlying main verb. The same holds for support verb constructions which paraphrase the passive of main verbs, with the difference that the predicative noun together with the support verb functions like the passive of the underlying main verb. For an illustration see the following examples:

(34) Anerkennung finden (= anerkannt werden)
(recognition find, to be recognized)

(35) zur Diskussion stehen (= diskutiert werden)
(for discussion stand, to be discussed)

(36) in Verwahrung sein (= verwahrt werden)
(in custody be, to be in custody/to be looked after)

(37) shows a support verb construction which can be paraphrased by a predicative adjective. There are support verb constructions which can be paraphrased neither by main verbs or their passive form nor by predicative adjectives; as an example see (38).

(37) in Wut geraten (= wütend werden)
(in rage get, to get angry)

(38) in Frage kommen
(in question come, to come into question)
≠ fragen (to ask)
≠ gefragt werden (to be asked)
≠ fragend sein/werden (questioning be/get)

[9] There are subtle matters of stylistic choice involved in choosing between a main verb or its paraphrase by a support verb construction (cf. Wanner 1992).

Apart from paraphrasing main verbs and predicative adjectives, many support verb constructions form variants[10] expressing different stages of processes. These stages are expressed by the Aktionsart of the support verb construction, which in most cases depends on the Aktionsart of the support verb. Following Mesli (1991), we distinguish four Aktionsarten, namely neutral, inchoative (the beginning stage), continuative (the uninterrupted continuation of a process[11]) and terminative (the final stage).

(39) a. Gewißheit haben *neutral*
(certainty have, to be certain)

b. Gewißheit erlangen *inchoative*
(certainty get, to be assured)

c. Gewißheit verlieren *terminative*
(certainty lose, no longer to be certain)

d. Gewißheit behalten *continuative*
(certainty keep, to rest assured)

In some cases the choice of the preposition occurring with the predicative noun determines the Aktionsart of the support verb construction; for instance:

(40) a. in das Gleichgewicht kommen *inchoative*
(in the balance come, to find one's balance)

b. aus dem Gleichgewicht kommen *terminative*
(out the balance come, to lose one's balance)

(41) a. zur Ruhe kommen *inchoative*
(to&the[12] calmness come, to calm down)

b. aus der Ruhe kommen *terminative*
(out of the calmness come, to become agitated)

Aktionsart is paradigmatic to support verb constructions, but Aktionsart can also be lexically motivated by adverbials like *wiederholt* (repetitively), *immer wieder* (again and again) or verbs like *beginnen* (to begin) and *aufhören* (to stop). Hence, the Aktionsart of the support verb construction determines the Aktionsart of the sentence whose head is the support verb construction unless the Aktionsart of the support verb construction is modified by the Aktionsart introduced by respective adverbials and verbs.

Apart from expressing the different stages of a process, some support verb constructions express the causal relation involved in a process. These support verb constructions have one extra argument for the cause(r) of the process.

(42) a. Gewißheit geben *inchoative+causative*
(certainty give, to assure)

b. Gewißheit nehmen *terminative+causative*
(certainty take, to make s.b. uncertain)

c. jemanden in Gewißheit wiegen *continuative+causative*
(s.b. in certainty rock, to reassure)

[10] We use the expression support verb construction for the whole paradigm as well as for the particular variants. The intended meaning should be clear from the context.

[11] Note that we do not explicitly differentiate between processes and states. We use process as a general term including process and state.

[12] & indicates contraction of preposition and determiner. The German prepositions *zu, in* and others can optionally be contracted with certain determiners, for example: *zu der* → *zur, zu dem* → *zum, in dem* → *im, in das* → *ins*.

(43) jemandem Ruhe lassen *neutral+causative*
(s.b. calmness let, to leave s.b. alone)

For all support verb constructions which have causative variants, the same set of Aktionsarten can be expressed by the causative and the non-causative variants. However, not all support verb constructions can express all stages of a process, as well as causativity.

(44) a. ins Schwitzen kommen *inchoative*
(in&the perspiration come, to break out in a sweat)
b. * im Schwitzen sein *neutral*
(in&the perspiration be, to sweat)
c. * im Schwitzen bleiben *continuative*
(in&the perspiration stay, to keep sweating)
d. * aus dem Schwitzen kommen *terminative*
(out of the perspiration come, to stop sweating)
e. zum Schwitzen bringen *inchoative+causative*
(to&the perspiration bring, to make s.b. sweat)
f. * im Schwitzen halten *continuative+causative*
(in&the perspiration keep, to keep s.b. transpiring)
g. * aus dem Schwitzen bringen *terminative+causative*
(out of the perspiration bring)

(45) a. *in Frage stehen *neutral*
(in question stand, to be questionable)
b. in Frage stellen *neutral+causative*
(into question put, to put into question)

As the following examples systematically illustrate, the predicative noun does not necessarily occur by itself, but also in combination with a preposition, contraction of preposition and determiner, or in a full NP or PP. In some cases, like *in Frage kommen*, the combination of the preposition and the noun is entirely fixed: the noun cannot be modified and cannot combine with a determiner. The noun *Frage* is a count noun, and therefore does not form a NP by itself, so that the categorial status of the combination *in Frage* is questionable. As far as support verb constructions showing a contraction of the preposition and the determiner are concerned, it is not possible in all contexts to pull the preposition and the determiner apart without leading to an odd reading, (48c) and (49c).

predicative noun alone

(46) a. Angst haben
(fear have, to have fear)
b. Kummer machen
(grief make, to make s.b. worried)
c. Abstand halten
(distance hold, to keep one's distance)

predicative noun and preposition

(47) a. in Gang sein/halten/bringen
(to be/keep/bring in gait, to be going on/to keep going/to set in motion)

b. in Frage kommen
(into question come, to come into question)

c. zu Fall kommen
(to fall come, to be ruined)

predicative noun and prep&det

(48) a. zur Ruhe kommen
(to&the calmness come, to calm down)

b. *zu Ruhe kommen
(to calmness come)

c. *zu der Ruhe kommen (to the calmness come)

(49) a. ins Schwitzen bringen
(to&the transpiration bring, to make s.b. sweat)

b. *in Schwitzen bringen
(to transpiration bring)

c. *in das Schwitzen bringen
(to the transpiration bring)

predicative noun as full NP

(50) a. einen Beschluß fassen
(a resolution grasp, to pass a resolution)

b. Beschlüße fassen
(resolutions grasp, to pass resolutions)

c. eine Frage stellen
(a question ask, to ask a question)

predicative noun as full PP

(51) a. in der Gewalt haben/sein,
(in the control have/be,
to have in one's hand / to be under s.b.'s control)

b. in Wut geraten[13]
(in anger get, to get angry)

4 Lexical Selection

Idioms and support verb constructions are collocational phenomena, which are characterized by the fact that they require the presence of classes of lexical items or even specific lexical items. The problem we address in this section is how such co-occurrence is best expressed in the grammar formalism of HPSG.

First we consider the case of completely fixed idioms, like *fix und fertig* (worn out), *auf und davon* (up and away), *hin und wieder* (now and then), *ganz und gar* (completely), *gang und*

[13] *in Wut* is a full PP because *Wut* as a mass noun is an NP.

gäbe (usual), *auf jeden Fall* (at any rate), *für die Katz* (of no use). The question is whether these should be represented as lexical or phrasal signs. While they appear to be phrasal — they consist of several words, and can often be formed by the rules and principles of the grammar — a treatment as phrasal signs causes two problems. The first concerns the semantics of the idiom. Even though one may introduce a new phrasal sign for each fixed idiom with its specific semantics, the Semantics Principle of HPSG assigns the phrase the semantics of its head, which leads to a conflict, e.g. for the idiom *fix und fertig* between the idiomatic reading 'finished' and the literal reading 'quick and ready'. The second problem is that there are idioms like *auf und davon* (on and away, up and away), which violate principles of the grammar, in this case the principle that a conjunction can only conjoin elements of compatible categories.

If we follow Paritong (1992) and consider the conjunction to be the head of the phrase, a solution could be to introduce a new lexical entry for *und* which takes *auf* and *davon* as arguments and has the semantics 'up and away'. This would mean that one also has to introduce a specific *und* for each expression such as *hin und wieder, fix und fertig, ganz und gar, gang und gäbe.* The introduction of such lexical items in case of completely fixed phrases is rather awkward and unmotivated. Moreover, the lexical entry for *und* would have to specify the order of its arguments, so that *auf und davon* would be allowed but not *davon und auf.* It is much more natural to introduce multi-word lexemes for this kind of phrase, and we adopt this approach for completely fixed idioms; see figure 1.

For more complex idioms, like *die Leviten lesen* or *den Löffel abgeben*, representation in the lexicon as a multi-word entry is not possible. The reason is that the idiom is not always contiguous, and allows different degrees of syntactic flexibility, as illustrated in the following examples.

(52) Der Meister *liest* dem Lehrling *die Leviten.*
(The master reads the apprentice the Leviticus.
The master lectures the apprentice.)

(53) Der Meister *liest* dem Lehrling gründlich *die Leviten.*
(The master reads the apprentice the Leviticus thoroughly.
The master lectures the apprentice thoroughly.)

(54) ...weil Peter *den Löffel* vorzeitig *abgegeben* hat.
(...because Peter the spoon prematurely away-given has,
because Peter kicked the bucket prematurely)

At first sight, it would seem natural to treat such idioms as phrasal signs (figure 2) because they have certain properties of phrases. The treatment of idioms as phrasal signs is supported by Fraser's (1970) observation that idioms must have internal structure, and by the fact that the syntactic form of idioms can often be derived by the rules and principles of the grammar.

$$\begin{bmatrix} \mathit{PHON}\ \mathit{auf\ und\ davon} & \\ \mathit{SYNSEM|LOC} & \begin{bmatrix} \mathit{CAT} & \begin{bmatrix} \mathit{HEAD}\ \mathit{adj}\ [\mathit{PRD}\ +] \\ \mathit{SUBCAT}\ \langle \mathit{NP}_{\boxed{1}} \rangle \end{bmatrix} \\ \mathit{CONT} & \begin{bmatrix} \mathit{REL}\ \mathit{gone\text{-}away} \\ \mathit{GOER}\ \boxed{1} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Figure 1: *auf und davon* (predicative adjective)

However, for HPSG theory there are good arguments for representing idioms as lexical signs: The verbal head of the idiom may have different inflectional forms, and idioms are often subject to processes like passivization, topicalization, etc. Since HPSG handles processes like

$$\begin{bmatrix} \mathit{PHON}\ \textit{die Leviten lesen} & \\ \mathit{SYNSEM|LOC} & \begin{bmatrix} \mathit{CAT} & \begin{bmatrix} \mathit{HEAD}\ \mathit{verb} \\ \mathit{SUBCAT} \langle NP[nom]_{\boxed{1}}, NP[dat]_{\boxed{2}} \rangle \end{bmatrix} \\ \mathit{CONT} & \begin{bmatrix} \mathit{REL}\ \textit{lecture} \\ \mathit{LECTURER}\ \boxed{1} \\ \mathit{LECTURED}\ \boxed{2} \end{bmatrix} \end{bmatrix} \\ \mathit{DTRS} & \begin{bmatrix} \mathit{HEAD\text{-}DTR}\ \mathit{verb}[\mathit{PHON}\ \textit{lesen}] & \\ \mathit{COMP\text{-}DTRS} & \left\langle \begin{bmatrix} \mathit{PHON}\ \textit{die Leviten} \\ \mathit{SYNSEM|LOC|CAT|HEAD}\ \mathit{noun}[\mathit{CASE}\ \mathit{acc}] \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

Figure 2: *die Leviten lesen* (phrasal sign)

passivization[14] by operations on lexical signs (lexical rules) rather than operations on phrasal signs (metarules or transformations), it is appropriate to represent idioms as lexical signs.

The relationship between the verbal head of the idiom and its "frozen" complement(s), or between the support verb and the predicative noun is then stated by subcategorization. In the following we will discuss what kind of information is relevant for selecting the "frozen" complements[15] of idioms or support verb constructions.

In case of support verb constructions such as *Angst/Probleme/Lust/Freude/Hoffnungen/ Befürchtungen/Schwierigkeiten haben,* selection of the predicative noun by semantic sorts suggests itself.[16] But there are support verb constructions that cause problems in selecting the "frozen" complement by semantic criteria. Considering examples (55) and (56), selection of lexical items based on semantics would also have to account for the fact that *Beschluß* (resolution) combines with *fassen* whereas *Entscheidung* (decision) combines with *fällen* or *treffen.*

(55) a. einen Beschluß fassen
(a resolution grasp, to pass a resolution)

b. *eine Entscheidung fassen
(a decision grasp)

(56) a. eine Entscheidung fällen/treffen
(a decision fell/meet, to make a decision)

b. *einen Beschluß fällen/treffen
(a resolution fell/meet)

Principally it is possible to treat examples like (55) and (56) by selection of the semantics of particular words. However, this would presuppose that there is a distinct semantic sort for each lexical item. Constructions such as those in example (57) cause problems for semantic selection: it is not clear what the semantics of the "frozen" complement *in Frage, in Gang* should be.

(57) a. in Frage kommen

b. in Gang kommen

In these cases, where the "frozen" complement is completely fixed, the "frozen" complement can be represented by a phrasal sign, and specified by either giving the PHON feature[17] or the

[14] Alternative conceptions of passivization, for example Kathol (1993), would also allow the representation of idioms and support verb constructions as phrasal signs. In this case only the stem of the verbal head has to be specified to allow for different inflection.

[15] We address the predicative noun as well as the fixed complements in an idiom as "frozen" complement(s).

[16] All these nouns have in common that they express some mental state.

[17] Together with a level of morphological representation, it would be possible to specify a particular lexeme or stem instead of the PHON feature.

DTRS feature (or both) a value. Both possibilities conflict with HPSG's theory of locality, which was expressed in Pollard and Sag (1987, p. 143f.) as the Locality Principle, which says: "the SUBCAT elements of lexical signs specify values for SYNTAX and SEMANTICS but crucially not for the attribute DAUGHTERS." In current versions of HPSG, this principle is embodied by the fact that only feature structures of type SYNSEM can appear on the SUBCAT list of heads, so that the specification of both the PHON and DTRS feature is excluded. We cannot think of a sensible way to specify complex "frozen" complements like *in Frage* or obligatory modification as in example (58) by specifying only SYNSEM information. As a consequence we assume that heads subcategorize for feature structures of type SIGN.

(58) a. ?Das Projekt nimmt eine Entwicklung.
(The project takes a development.
The project develops.)

b. Das Projekt nimmt eine günstige/vorhersehbare/entscheidende/beachtliche/... Entwicklung.
(The project takes a favorable/foreseeable/decisive/remarkable/... development.
The project develops in a favorable/foreseeable/decisive/remarkable/... manner.)

$$\begin{bmatrix} \mathit{PHON}\ \mathit{kommen} & \\ \mathit{SYNSEM|LOC} & \begin{bmatrix} \mathit{CAT} & \begin{bmatrix} \mathit{HEAD}\ \mathit{verb} \\ \mathit{SUBCAT}\ \left\langle NP[nom]_{\boxed{1}}, PP[\mathit{PHON}\ \mathit{in\ Frage}] \right\rangle \end{bmatrix} \\ \mathit{CONT} & \begin{bmatrix} \mathit{REL}\ \mathit{be\text{-}possible} \\ \mathit{THEME}\ \boxed{1} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Figure 3: *in Frage kommen* (lexical sign)

Figure 3 shows how support verb constructions with a verbal head, and a completely fixed "frozen" complement, such as *in Frage kommen*, can be treated by specifying the complement as [PHON in Frage]. Remember that these phrases violate the principles of the grammar — *Frage* or *Gang* without a determiner are not NPs — and occur only in these combinations.[18]

In idioms or support verb constructions which allow for passivization, the specification of the "frozen" complement with PHON causes problems because the change of the object from accusative to nominative causes a corresponding change in the PHON value. It would be necessary to have two different specifications, one for the complement in the active expression and another for the passive, as will be illustrated with *den Garaus machen* (the Garaus make, to finish off).[19]

(59) Die Frau machte dem Mann den Garaus. *active*
(The woman made the man the Garaus.
The woman finished the man off.)

(60) Der Garaus wurde dem Mann gemacht. *passive*
(The Garaus was the man made. The man was finished off.)

In case the specific phrase which is subcategorized for can appear in singular or plural or has variable determination, or can be modified, the result would be a combinatorial explosion of the PHON value; such as *einen/den Beschluß fassen, (die) Beschlüsse fassen, lange vorbereitete*

[18] Our proposal to have some multiple-word chunks like *auf und davon* or *in Frage*, *in Gang* which do not have a DAUGHTERS value raises the question whether they do have internal structure at all. For our analysis of support verb constructions, the internal structure is not relevant, so that we will not pursue the matter further.

[19] However, the stem *Garaus* could be specified at a morphological representation level.

Beschlüsse fassen, etc. In order to describe these possibilities of variation, a level of representation is needed at which to specify which lexeme is the head of the phrase without having to specify the PHON value. For support verb constructions, like *Beschluß fassen*, where internal modification and different determination/quantification of the predicative noun are possible, it is only necessary to specify which predicative noun is the lexical head of the noun phrase. In Erbach (1992), a head feature LEXEME[20] was proposed for this purpose. By subcategorization of a phrase with a particular value for the head feature LEXEME, it is ensured that the lexical head of the phrase is that particular lexeme.

However, the predicative noun can not only be realized by the lexeme itself, but also by a pronoun, to which the predicative noun is the antecedent.

(61) Der Journalist hatte 50 Fragen vorbereitet. Aber er konnte nur drei davon stellen.
(The journalist had prepared 50 questions. But he could only ask three of them.)

(62) Die Fragen, die er gestellt hat, waren die bösartigsten.
(The questions which he asked, were the most vicious ones.)

Since pronouns and their antecedents do not share head features, but index features like gender and number, we make LEXEME an index feature, and assume that pronouns don't have an index feature LEXEME of their own, but share it with their antecedents.

Figure 4 shows the SYNSEM|LOCAL value of the lexical entry for the idiom *(den Garaus) machen.*[21] The specific form *den Garaus* is specified by selecting for an NP with LEXEME value "Garaus," number singular, definite determination, no modification and case accusative. The question then arises how to enforce definite determination and exclude modification of the NP headed by *Garaus* in the HPSG framework. While it may be possible to specify these properties at a semantic level, we stick with a less speculative approach, namely specification of the DTRS feature. By requiring that the head daughter is a noun (lexical sign), any possibilities for modification are excluded. The feature MARKER-DTR is assigned the value DEFINITE.

$$\begin{bmatrix} CAT & \begin{bmatrix} HEAD & verb \\ SC & \left\langle \begin{array}{l} NP[nom]_{\boxed{1}}, \\ NP[dat]_{\boxed{2}}, \\ NP[acc, sg]\begin{bmatrix} DTRS \begin{bmatrix} HEAD\text{-}DTR \ldots \ INDEX|LEXEME \ Garaus] \\ MARKER\text{-}DTR \ \ det \ [def] \end{bmatrix} \end{bmatrix} \end{array} \right\rangle \end{bmatrix} \\ CONT & \begin{bmatrix} RELkill \\ KILLER \ \boxed{1} \\ KILLED \ \boxed{2} \end{bmatrix} \end{bmatrix}$$

Figure 4: SYNSEM|LOCAL value of *(Garaus) machen*

When the passivization lexical rule is applied to the lexical sign whose SYNSEM|LOCAL value is represented in figure 4, the "frozen" complement (accusative) becomes the subject and receives the nominative case, so that the string *der Garaus* results by the specification NP[nominative, definite, singular, no modification].

Our theory predicts that those "frozen" complements or predicative nouns which are selected by the index feature LEXEME can be realized as a pronoun, while those that are selected by the PHON feature cannot.[22]

[20] This head feature can be regarded as a generalization of the PFORM feature of HPSG, similar to the FORM feature proposed by Bresnan (1982) for handling idioms in LFG.

[21] If necessary, we abbreviate SUBCAT as SC and write the elements of the SUBCAT list from top to bottom instead of left to right, in order to keep the width of the feature structures within the width of the page.

[22] In case of *Garaus* it is very hard to determine the possibility of pronominalization, e.g. by a relative pronoun because *Garaus* can only occur in the construction *den Garaus machen*, and its passive form, so that

The former are also those predicative nouns which can be modified and quantified.[23]

5 Semantics of Idioms

In this section we propose a representation of idioms that accounts for unanalyzable idioms and discuss the treatment of metaphorical idioms.

Considering the semantics of *die Leviten lesen* (figure 5) we have still access to the meaning relation of the idiom's "frozen" complement *die Leviten* to the Jewish scripture, the Leviticus. But we consider this knowledge as extralinguistic and not immediately relevant for the use and understanding of the idiom. We thus specify a lexical entry of *lesen(die Leviten)*, where the semantics of *die Leviten* is ignored as illustrated in figure 6. There is a slight technical complication with "ignoring the semantics": by virtue of the Quantifier Inheritance Principle, the quantified expression *die Leviten* will appear on the list of quantifiers even though it plays no role in the semantics of the phrase. In order to avoid this, we modify the Quantifier Inheritance Principle (QIP) in such a way that only quantified expressions which are assigned a thematic role by the verb are added to the list of quantifiers. Each verb instantiates the thematic roles of its arguments; in the case of *die Leviten*, the value *nil* is used to denote that no semantic role is assigned.[24]

> Quantifier Inheritance Principle (revised) :
> The QUANTIFIER-STORE (QSTORE) value of a phrasal node is the union of the QSTORE values of *those daughters that are assigned a thematic role* less those quantifiers that are retrieved at that node.

$$\begin{bmatrix} \mathit{PHON\ lesen} \\ \mathit{SYNSEM|LOC} \begin{bmatrix} \mathit{CAT} \begin{bmatrix} \mathit{HEAD\ verb} \\ \mathit{SUBCAT} \left\langle \mathit{NP}\,[\mathit{nom}]_{\boxed{1}}, \mathit{NP}\,[\mathit{dat}]_{\boxed{2}}, \mathit{NP}\,[\mathit{die\ Leviten}] \right\rangle \end{bmatrix} \\ \mathit{CONT} \begin{bmatrix} \mathit{REL\ lecture} \\ \mathit{LECTURER}\ \boxed{1} \\ \mathit{LECTURED}\ \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Figure 5: *die Leviten lesen* (lexical sign)

On the other hand, there are metaphorical idioms like *ins Fettnäpfchen treten*, in which the "frozen" complement can be modified.

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only strange examples can be constructed which do not permit grammaticality judgements, e.g. *Peter machte Paul den Garaus, den Maria Karl machte.* Furthermore modification of *Garaus* is highly restricted: *?Der plötzliche/endgültige/sprichwörtliche Garaus wurde Paul gemacht. Garaus machen* is a typical example for the collocational phenomena treated in this paper as it illustrates the problem of a clear distinction of different kinds of idioms and support verb constructions. On one hand *Garaus machen* can be understood as unanalyzable idiom, because of the restricted occurrence possibilities of *Garaus*; on the other hand the idiom shows syntactic flexibility (active and passive form), and the "frozen" complement *Garaus* can be assigned a meaning even though in a sentence it never occurs without *machen*.

[23] There are strong and highly complex restrictions on the possibilities of modification, determination and quantification of predicative nouns in support verb constructions, for instance: *Angst haben/bekommen* does not have a determiner whereas *Angst verlieren* demands for determination: *die/seine Angst verlieren. Entwicklung nehmen* requires modification of the predicative noun: *Das Projekt nimmt eine vorhersehbare/(un)günstige … Entwicklung* instead of *?Das Projekt nimmt eine Entwicklung.* Future research into the syntax and semantics of predicative nouns, and the interrelation of syntax and semantics in the support verb construction should provide more insights into the nature of these restrictions.

[24] There is independent evidence for thematic roles on the arguments of verbs — they are used for the statement of word order principles (Uszkoreit 1987) and the possibility of passivization appears to depend on them.

$$\left[\begin{array}{ll} PHON\ lesen & \\ SYNSEM|LOC & \left[\begin{array}{ll} CAT & \left[\begin{array}{ll} HEAD\ verb & \\ SUBCAT & \left\langle \begin{array}{l} NP\,[nom, \theta\text{-}ROLE\ agent]_{\boxed{1}}, \\ NP\,[dat, \theta\text{-}ROLE\ patient]_{\boxed{2}}, \\ NP\,[die\ Leviten, \theta\text{-}ROLE\ nil] \end{array} \right\rangle \end{array}\right] \\ CONT & \left[\begin{array}{l} REL\ lecture \\ LECTURER\ \boxed{1} \\ LECTURED\ \boxed{2} \end{array}\right] \end{array}\right] \end{array}\right]$$

Figure 6: *die Leviten lesen* (empty θ-role for the "frozen" complement)

(63) Er muß in jedes diplomatische Fettnäpfchen treten.
(He must into every diplomatic grease pot step.
He has to drop every diplomatic brick.)

(64) In welches Fettnäpfchen wird er diesmal treten?
(Into which grease pot will he this time step?
Which brick will he drop this time?)

In this case it only needs to be specified that the head lexeme of the phrase is *Fettnäpfchen*, with no restrictions on number, determination and quantification. With respect to the semantic effect of the quantification (*jedes Fettnäpfchen*) or modification (*diplomatisches Fettnäpfchen*), we hold the position that "frozen" complements which can be modified or quantified, can be assigned independent meaning, to which the quantification or modification applies. This is in contrast to the view that modification of "frozen" complements modifies the entire idiom[25] (Abeillé 1991, Bresnan 1982). In this case, the word *Fettnäpfchen* has its meaning "potentially embarrassing situation" even without the verb *treten*, as in sentence (65). We treat idioms whose "frozen" complements are modifiable and quantifiable as metaphorical idioms, that is by assigning each of the components (*Fettnäpfchen* and *treten*) their transferred meaning, and combining these meanings compositionally.[26]

(65) Er läßt kein Fettnäpfchen aus.
(He does not skip any grease pot.)

(66) Es gibt noch viele Fettnäpfchen, in die er treten kann.
(There are many grease pots, he may step in.
There are many bricks he may drop.)

(67) Dieses Fettnäpfchen hat er ausgelassen, aber in das nächste wird er bestimmt treten.
(He did skip this grease pot but the following one he will surely step in.)

6 Argument Structure, Syntax, and Semantics of Support Verb Constructions

In this section, we present an analysis of the argument structure and semantics of support verb constructions. We examine how the argument structure and the semantics of the support verb construction are related to the argument structure and the semantics of the predicative noun

[25] Even in the example that is commonly cited in favor of this view, *keep (close) tabs on somebody*, we find that *tabs* may have independent meaning, as in the possible newspaper headline: *"FBI: Tabs on Jane Fonda."*

[26] A mechanism for this kind of meaning transfer is suggested by Pulman (1993) under the name of quasi-inference.

and the support verb, and how the arguments are syntactically realized. Because the predicative nouns are often nominalizations of verbs, we will also look at the argument structure of the underlying verb.

The characteristic semantic property of support verb constructions is that their semantics is mainly the semantics of the predicative noun, plus semantic information coming from the support verb, at least tense, causativity, and often Aktionsart. The argument structure of the predicative noun (and the noun's underlying verb in case of a deverbal noun) is reflected in the argument structure of the support verb construction as shown in (68) and (69).

(68) a. Peters_{gen}[1] Angst vor dem Paul_{PP}[2]
(Peter's fear before the Paul, Peter's fear of Paul)

b. Peter_{nom}[1] hat Angst vor dem Paul_{dat}[2].
(Peter has fear before the Paul.
Peter is afraid of Paul.)

(69) a. Peter_{nom}[1] rät dem Paul_{dat}[2], ein Haus zu $\text{kaufen}_{S[inf]}$[3].
(Peter advises the Paul a house to buy.
Peter advises Paul to buy a house.)

b. Peters_{gen}[1] Rat an den Paul_{PP}[2], ein Haus zu $\text{kaufen}_{S[inf]}$[3].
(Peter's advice to the Paul a house to buy,
the advice of Peter to Paul to buy a house)

c. Peter_{nom}[1] gibt dem Paul_{dat}[2] den Rat, ein Haus zu $\text{kaufen}_{S[inf]}$[3].
(Peter gives the Paul the advice a house to buy.
Peter gives Paul the advice to buy a house.)

However, there are differences in the surface realization of arguments occurring as nominal or verbal arguments. While the subjects of verbs usually occur in nominative case (69a), the subjects of nouns occur as genitives or von-phrases (68a) and (69b).[27] Dative NPs verbs subcategorize for are expressed as prepositional phrases occurring in the subcategorization frame of the corresponding nouns (69b). Support verb constructions mostly show a similar surface realization of their arguments as the predicative nouns' underlying verbs do (69a and c).

In case of *Vertrauen haben* there are differences in the surface realization: the dative argument subcategorized for by the verb *vertrauen* is realized as PP_{zu} in the support verb construction, see (70b).

(70) a. vertrauen(NP_{nom}[1], NP_{dat}[2])
Peter vertraut dem Paul. (Peter trusts the Paul, Peter trusts Paul.)

b. haben(NP_{nom}[1], $\text{NP}_{Vertrauen}$, (PP_{zu}[2]))
Peter hat Vertrauen zu Paul.
(Peter has trust to the Paul.
Peter trusts in Paul.)

Comparing the argument frame of (69c) and (70b), in both, a dative argument of the predicative noun's underlying verb has to be realized. In case of *Rat geben* the dative is syntactically realized similarly in the subcategorization frame of the main verb and the support verb construction. In the support verb construction *Vertrauen haben* the main verb's dative argument is syntactically realized as prepositional phrase with a preposition expressing directionality. The difference in the surface realization of the dative argument in (69c) and (70b) gives rise to the assumption that the subcategorization frame of a support verb construction is dependent on both, the subcategorization frame of the predicative noun (or, if deverbal, the predicative

[27] The alternative realization of the subject as NP_{gen} or PP_{von} is general for nominalizations in German.

noun's underlying verb) and the subcategorization frame of the support verb. As *haben* subcategorizes for an NP_{nom} and an NP_{acc}, which is filled by the predicative noun, there is no argument position for the dative available, therefore it can only occur as an adjunct. In contrast, the subcategorization frame of *geben* has an argument with dative case marking, which can be filled.

In case of the support verb construction *in der Gewalt haben,* the predicative noun *Gewalt* occurs in a prepositional phrase and not as the object of *haben*, which is filled by the second argument of *Gewalt*.

(71) a. die Gewalt des $\mathrm{Peter}_{nom}[1]$ über den $\mathrm{Paul}_{PPacc}[2]$
b. der $\mathrm{Peter}_{nom}[1]$ hat den $\mathrm{Paul}_{acc}[2]$ in der Gewalt

Given a predicative noun, it is not in general predictable with which verbs it can form a support verb construction and which argument position it will occupy. For the purposes addressed in this paper it is sufficient to treat (non-causative) support verbs as semantically "empty." At a deeper level of analysis, the lexical semantic information of the support verb plays a role in establishing the relationship between the argument structure of the predicative noun and that of the support verb. For example, in the support verb construction *Angst haben*, the mental state *Angst* is something that can be possessed in a metaphorical sense, and can therefore appear as the object of *haben*. Support verb constructions in which the choice of the preposition determines the Aktionsart like *ins Gleichgewicht kommen/bringen, aus dem Gleichgewicht kommen/bringen* can be interpreted as metaphors, due to the fact that verbs and prepositions which usually express change of location are used to express change of state.

In the following, we take the combinations of particular support verbs and predicative nouns for granted, as well as the position of the predicative noun in the argument structure of the support verb. We will provide a representation of support verb constructions that accounts for the fact that the arguments of the predicative noun are raised to the support verb whereas this is not the case with main verbs, as (72) and (73) show.[28]

(72) a. ?*Peter hat Hans' Angriff gegen Marie gerichtet.
(Peter has Hans' attack against Marie directed.
Peter carried out Hans' attack against Marie.)
b. Peter hat Hans' Angriff gegen Marie gesehen.
(Peter has Hans' attack against Marie seen.
Peter saw Hans' attack against Marie.)

(73) a. Peter hat einen Angriff gegen Marie gerichtet.
(Peter has an attack against Marie directed.
Peter carried out an attack against Marie.)
Gegen wen hat Peter einen Angriff gerichtet?
(Against whom has Peter an attack directed?
Against whom did Peter carry out an attack?)
b. Peter hat einen Angriff gegen Marie verurteilt.
(Peter has an attack against Marie condemned.
Peter condemned an attack against Marie.)
*Gegen wen hat Peter einen Angriff verurteilt?
(Against whom has Peter an attack condemned?
Against whom did Peter condemn an attack?)

Figure 7 shows the lexical entry for the predicative noun *Angst*, which subcategorizes for two (optional) arguments. For the time being, we simply assume that the semantics of predicative nouns resembles that of verbs.[29]

[28] Example (72a) is due to Danlos (1992).
[29] We expect that further research will lead to refinements of this assumption. Toward the end of the paper, we consider one tentative modification.

$$\begin{bmatrix} \mathit{PHON}\ \mathit{Angst} \\ \mathit{SYNSEM|LOC} \begin{bmatrix} \mathit{CAT} \begin{bmatrix} \mathit{HEAD}\ \mathit{noun} \\ \mathit{SUBCAT}\ \left\langle \left(\mathit{NP}[\mathit{gen}]_{\boxed{1}}\right),\ \left(\mathit{PP}[\mathit{vor}]_{\boxed{2}}\right) \right\rangle \end{bmatrix} \\ \mathit{CONT} \begin{bmatrix} \mathit{REL}\ \mathit{angst} \\ \mathit{EXPERIENCER}\ \boxed{1} \\ \mathit{PHENOMENON}\ \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Figure 7: *Angst* (predicative noun)

For the support verb *haben* (figure 9)[30] we assume a feature structure similar to that of the main verb *haben* (figure 8). The support verb differs from the main verb in the following respects: If the support verb *haben* combines with a noun phrase headed by a predicative noun, this noun phrase occurs in the object position of *haben*; the first argument of the predicative noun is co-indexed semantically with the subject of the support verb; all additional arguments of the predicative noun that cannot be mapped onto an argument of the support verb are appended to the SUBCAT list of the support verb; the semantic relation introduced by the predicative noun is inherited to the support verb; the Aktionsart of the entire support verb construction is specified by the support verb.

$$\begin{bmatrix} \mathit{PHON}\ \mathit{haben} \\ \mathit{SYNSEM|LOC} \begin{bmatrix} \mathit{CAT} \begin{bmatrix} \mathit{HEAD}\ \mathit{verb} \\ \mathit{SUBCAT}\ \left\langle \mathit{NP}[\mathit{nom}]_{\boxed{1}},\ \mathit{NP}[\mathit{acc}]_{\boxed{2}} \right\rangle \end{bmatrix} \\ \mathit{CONT} \begin{bmatrix} \mathit{RELN}\ \mathit{have} \\ \mathit{POSSESSOR}\ \boxed{1} \\ \mathit{POSSESSED}\ \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Figure 8: *haben* (main verb)

$$\begin{bmatrix} \mathit{CAT} \begin{bmatrix} \mathit{HEAD}\ \mathit{verb} \\ \mathit{SC}\ \left\langle \mathit{NP}[\mathit{nom}]_{\boxed{1}},\ \mathit{NP}[\mathit{acc},\ \mathit{Angst} \vee ...\mathit{Vertrauen}] \begin{bmatrix} \mathit{CAT|SC}\ [\ ]_{\boxed{1}} + \boxed{2} \\ \mathit{CONT}\ \boxed{3} \end{bmatrix} \right\rangle \& \boxed{2} \end{bmatrix} \\ \mathit{CONT}\ \ \boxed{3}\ [\mathit{AKTIONSART}\ \mathit{neutral}] \end{bmatrix}$$

Figure 9: SYNSEM|LOCAL value of *haben* (support verb)

The feature structure in figure 10 results from the instantiation of the direct object position of the support verb with the lexical sign of the predicative noun *Angst*.

In support verb constructions where the predicative noun occurs within a prepositional phrase, the direct object of *haben* is semantically co-indexed with the second argument of the SUBCAT list of the predicative noun, as shown in figure 12.

The following examples concern the support verb *machen* which can occur in non-causative support verb constructions with predicative nouns such as *Vorschlag, Behauptung* as well as in causative support verb constructions with predicative nouns like *Angst, Hoffnung*.

In figure 13 the contribution of the Aktionsart "neutral" to the semantics of the support verb construction by the support verb *machen* is illustrated. For non-causative support-verb constructions, we limit ourselves to inheriting the semantic content from the predicative noun. Verbs like *erhalten, erlangen, bekommen*; *verlieren, abkommen*; *behalten, bleiben* contribute the inchoative, terminative and continuative Aktionsart, respectively.

[30] The operator + denotes construction of a list from a first element and a rest, which is again a (possibly empty) list. $\boxed{1}+\boxed{2}$ equals [FIRST $\boxed{1}$, REST $\boxed{2}$]. The operator & denotes concatenation of lists.

$$
\left[\begin{array}{ll}
CAT & \left[\begin{array}{ll}
HEAD & verb \\
SC & \left\langle \begin{array}{l}
NP[nom]_{\boxed{1}}, \\
\left[\begin{array}{ll}
PHON & Angst \\
SYNSEM|LOCAL & \left[\begin{array}{ll}
CAT & \left[SC \left\langle \begin{array}{l} (NP[gen]_{\boxed{1}}), \\ (PP[vor]_{\boxed{2}}) \end{array} \right\rangle \right] \\
CONT\ \boxed{3} & \left[\begin{array}{ll} REL & angst \\ EXPERIENCER & \boxed{1} \\ PHENOMENON & \boxed{2} \end{array}\right]
\end{array}\right]
\end{array}\right], \\
(PP[vor]_{\boxed{2}})
\end{array} \right\rangle
\end{array}\right] \\
CONT & \boxed{3}\ [AKTIONSART\ neutral]
\end{array}\right]
$$

Figure 10: SYNSEM|LOCAL value of *(Angst) haben* (fully instantiated)

$$
\left[\begin{array}{ll}
PHON & Gewalt \\
SYNSEM|LOC & \left[\begin{array}{ll}
CAT & \left[\begin{array}{ll} HEAD & noun \\ SUBCAT & \left\langle (NP[gen]_{\boxed{1}}),\ (PP[\ddot{u}ber]_{\boxed{2}}) \right\rangle \end{array}\right] \\
CONT & \left[\begin{array}{ll} REL & control \\ CONTROLLER & \boxed{1} \\ CONTROLLED & \boxed{2} \end{array}\right]
\end{array}\right]
\end{array}\right]
$$

Figure 11: *Gewalt* (predicative noun)

The causative variant of the support verb *machen* differs from the non-causative variant in that it introduces a relation CAUSE with two argument positions: one for the cause(r) and the second for that which is caused. The semantics value of the second argument is inherited from the predicative noun. The syntactic effect of causativity is the increase of the number of arguments of the support verb construction by one. The subject of the predicative noun, the NP_{gen}, is turned into a dative or accusative object, depending on the support verb (figure 14).

The support verb *kommen* occurs as well in inchoative as in terminative variants of support verb constructions, as the examples *aus dem Gleichgewicht kommen* (terminative) and *in das Gleichgewicht kommen* (inchoative) show. In these support verb constructions the Aktionsart is contributed by the prepositions *aus* and *in*+acc. The SYNSEM|LOCAL values of the lexical entries for *kommen,* in combination with *Gleichgewicht,* are given in figures 15 and 16.

Replacing the support verb *kommen* by the support verb *bringen* we get the corresponding causative reading. Figure 17 shows the inchoative causative variant.

(74) a. aus dem Gleichgewicht bringen *terminative+causative*
(out of balance bring, to unbalance)

b. in das Gleichgewicht bringen *inchoative+causative*
(into balance bring, to balance)

$$
\left[\begin{array}{ll}
CAT & \left[\begin{array}{ll}
HEAD & verb \\
SC & \left\langle \begin{array}{l}
NP[nom]_{\boxed{1}}, \\
NP[acc]_{\boxed{2}}, \\
\left[\begin{array}{ll}
SYNSEM|LOCAL|HEAD & prep\ [PFORM\ in] \\
DTRS|COMP\text{-}DTRS & \left\langle NP[dat, Gewalt] \left[\begin{array}{ll} SC & \left\langle [\ ]_{\boxed{1}}, [\ ]_{\boxed{2}} \right\rangle \\ CONT & \boxed{3} \end{array}\right] \right\rangle
\end{array}\right]
\end{array} \right\rangle
\end{array}\right] \\
CONT & \boxed{3}[AKTIONSART\ neutral]
\end{array}\right]
$$

Figure 12: SYNSEM|LOCAL value of *(in der Gewalt) haben*

$$\begin{bmatrix} CAT & \begin{bmatrix} HEAD & verb \\ SC & \left\langle \begin{array}{l} NP[nom]_{\boxed{1}}, \\ \left(NP[dat]_{\boxed{2}}\right), \\ NP[acc,\ Vorschlag \vee \ldots]\begin{bmatrix} CAT|SC & [\,]_{\boxed{1}} + [\,]_{\boxed{2}} + \boxed{3} \\ CONT & \boxed{4} \end{bmatrix} \end{array} \right\rangle \& \boxed{3} \end{bmatrix} \\ CONT & \boxed{4}[AKTIONSART\ neutral] \end{bmatrix}$$

Figure 13: SYNSEM|LOCAL value of *machen,* non-causative

$$\begin{bmatrix} CAT & \begin{bmatrix} HEAD & verb \\ SC & \left\langle \begin{array}{l} NP[nom]_{\boxed{1}}, \\ \left(NP[dat]_{\boxed{2}}\right), \\ NP[acc, Angst \vee \ldots]\begin{bmatrix} CAT|SC & [\,]_{\boxed{2}} + \boxed{3} \\ CONT & \boxed{4} \end{bmatrix} \end{array} \right\rangle \& \boxed{3} \end{bmatrix} \\ CONT & \begin{bmatrix} RELN & cause \\ CAUSE & \boxed{1} \\ CAUSED & \boxed{4}[AKTIONSART\ inchoative] \end{bmatrix} \end{bmatrix}$$

Figure 14: SYNSEM|LOCAL value of *machen,* causative

In some support verb constructions the preposition occurring with the predicative noun differs in the causative and non-causative variant, (75) and (76), or is missing (77). Examples (75) to (77) show variation in the *kommen/bringen* paradigm.

(75) a. zum Schwitzen bringen
(to the perspiration bring, to make s.b. sweat)

b. ins Schwitzen kommen
(into the perspiration come, to break out in a sweat)

(76) a. zur Verzweiflung bringen
(to&det despair bring, to drive s.b. to despair)

b. in Verzweiflung geraten
(into despair get, to sink into despair)

(77) a. aus der Fassung bringen
(out the self-control bring, to upset)

b. die Fassung verlieren
(the self-control lose, to lose one's self-control)

To conclude this section, we make some tentative remarks about the possibilities of modification and quantification of the predicative noun in support verb constructions.

$$\begin{bmatrix} CAT & \begin{bmatrix} HEAD & verb \\ SC & \left\langle \begin{array}{l} NP[nom]_{\boxed{1}}, \\ \begin{bmatrix} SYNSEM|LOCAL|HEAD\ prep\ [PFORM\ in] \\ DTRS|COMP\text{-}DTRS \left\langle NP[acc, Gleichgewicht]\begin{bmatrix} CAT|SC \langle [\,]_{\boxed{1}} \rangle \\ CONT\ \boxed{3} \end{bmatrix} \right\rangle \end{bmatrix} \end{array} \right\rangle \end{bmatrix} \\ CONT & \boxed{3}[AKTIONSART\ inchoative] \end{bmatrix}$$

Figure 15: SYNSEM|LOCAL value of *kommen (in),* inchoative

$$
\left[\begin{array}{ll}
CAT & \left[\begin{array}{ll}
HEAD & verb \\
SC & \left\langle NP[nom]_{\boxed{1}},\ \left[\begin{array}{l}
SYNSEM|LOCAL|HEAD\ prep\ [PFORM\ aus] \\
DTRS|COMP\text{-}DTRS \left\langle NP[dat,\ Gleichgewicht] \left[\begin{array}{l} CAT|SC \left\langle [\ ]_{\boxed{1}} \right\rangle \\ CONT\ \boxed{3} \end{array}\right] \right\rangle
\end{array}\right] \right\rangle
\end{array}\right] \\
CONT & \boxed{3}[AKTIONSART\ terminative]
\end{array}\right]
$$

Figure 16: SYNSEM|LOCAL value of *kommen (aus)*, terminative

$$
\left[\begin{array}{ll}
CAT & \left[\begin{array}{ll}
HEAD & verb \\
SC & \left\langle NP[nom]_{\boxed{1}},\ NP[acc]_{\boxed{2}},\ \left[\begin{array}{l}
SYNSEM|LOCAL|HEAD\ prep\ [PFORM\ in] \\
DTRS|COMP\text{-}DTRS \left\langle NP[acc,\ Gleichgewicht] \left[\begin{array}{l} CAT|SC \left\langle [\ ]_{\boxed{2}} \right\rangle \\ CONT\ \boxed{3} \end{array}\right] \right\rangle
\end{array}\right] \right\rangle
\end{array}\right] \\
CONT & \left[\begin{array}{l}
RELATION\ cause \\
CAUSE\ \boxed{1} \\
CAUSED\ \boxed{3}[AKTIONSART\ inchoative]
\end{array}\right]
\end{array}\right]
$$

Figure 17: SYNSEM|LOCAL value of *bringen(in)*, inchoative+causative

In support verb constructions such as *Vorschlag machen* either the predicative noun or the support verb construction as a whole can be quantified or modified. Note that quantification over or modification of the predicative noun differs from quantification over or modification of the entire support verb construction, as shown in examples (78), (79).

(78) a. Peter macht den Vorschlag, ein Haus zu kaufen.
(Peter makes the suggestion, a house to buy.
Peter makes the suggestion to buy a house.)

b. Peter macht drei Vorschläge, ein Haus zu kaufen.
(Peter makes three suggestions, a house to buy.
Peter makes three suggestions to buy a house.)
quantification over the predicative noun

c. Peter macht dreimal den Vorschlag, ein Haus zu kaufen.
(Peter makes three times the suggestion, a house to buy.
Peter makes the suggestion to buy a house three times.)
quantification over the support verb construction

(79) a. Peter macht dumme Vorschläge.
(Peter makes stupid suggestions.)
modification of the predicative noun

b. Peter macht dumm Vorschläge.
(Peter makes stupidly suggestions.
Peter stupidly makes suggestions.)
modification of the support verb construction

(78b) implies that there are three different suggestions whereas (78c) implies three occurrences of a suggestion event. (79a) says that the suggestions that Peter makes are stupid, whereas (79b) means that Peter makes his suggestions in a stupid manner. These contrasts would not be expected if the semantics of the support verb construction were equal to the semantics of the predicative noun. In that case, modification of the support verb should have the same effect as modification of the entire support verb construction.

For modification or quantification of the entire support verb construction, we assume that the support verb introduces an event parameter and possibly an abstract predicate. It is this event parameter to which quantification or modification applies.

For modification or quantification of the predicative noun, we assume that not the entire semantic relation of the predicative noun is affected by the quantification or modification, but only the argument that is co-indexed with the parameter, in the case of *Vorschlag* the PROPOSAL argument (figure 18). In that way only the propositional content of the proposal, but not the action of proposing is affected by the quantification.

$$\begin{bmatrix} PHON\ Vorschlag & \\ SYNSEM|LOCAL & \begin{bmatrix} CAT|SUBCAT & \left\langle NP[gen]_{\boxed{3}}, PP[an]_{\boxed{2}}, S[\mathrm{inf}]_{\boxed{1}} \right\rangle \\ CONT & \begin{bmatrix} INDEX\ \boxed{1} & \\ RESTR & \left\{ \begin{bmatrix} RELN\ propose \\ PROPOSER\ \boxed{3} \\ ADDRESSEE\ \boxed{2} \\ PROPOSAL\ \boxed{1} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Figure 18: *Vorschlag*

Much more research must be devoted to the lexical and compositional semantics of predicative nouns, nominalization, semantics of states and events before these issues can finally be settled.

7 Conclusion

In this paper, we have made an attempt to treat collocational phenomena like idioms and support verb constructions in HPSG. HPSG, as it stands, is not well equipped to handle lexical selection. We have argued that in case of totally fixed idioms a representation of multi-word lexemes with the specification of the PHON feature is appropriate. For idioms which consist of a head and a “frozen” complement and support verb constructions we proposed to handle the relationship between the head and the “frozen” complement or predicative noun, respectively, by subcategorization. Depending on how fixed the “frozen” complement or predicative noun is, either the PHON feature, the DAUGHTERS feature or the newly introduced INDEX feature LEXEME is specified. As a consequence, we subcategorize for feature structures of type SIGN instead of SYNSEM.

We specify the semantics of idioms in the syntactic head of the construction. The semantics of the “frozen” complement is ignored, and the Quantifier Inheritance Principle is modified so that quantification over the “frozen” complement is avoided.

The semantic core of the support verb construction is inherited from the predicative noun; in general the support verb adds the Aktionsart and possibly information about the causative relation. The support verb fills one of its argument positions with the predicative noun, and its other argument positions with arguments of the predicative noun. Any remaining arguments of the predicative noun are appended to the SUBCAT list of the support verb. In case of causative support verb constructions, one argument position of the support verb is filled by the cause(r).

The representation of idioms and support verb constructions we have presented in this paper allows for the description of various kinds of idioms and support verb constructions, which may be fixed or open to modification to different degrees. This representation is also open to a more fine-grained lexical semantics as well as to the application of principles of metaphorization.

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