English prepositional passive constructions

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Abstract

An empirical overview of the properties of English prepositional passives is presented, followed by a discussion of formal approaches to the analysis of the various types of prepositional passives in HPSG. While a lexical treatment is available, the significant number of technical and conceptual difficulties encountered point to an alternative approach relying on constructional constraints. The constructional approach is argued to be the best option for prepositional passives involving adjunct PPs, and this analysis can be extended to create a hierarchy of constructions accommodating all types of prepositional passives in English, and the ordinary NP passive.

1 Syntactic and non-syntactic constraints

In addition to the ordinary passive alternation involving transitive verbs (1a), English allows "prepositional passives" (also referred to as "pseudopassives"), where the subject in the passive structure corresponds to the object of a preposition in the related active structure (1b–c).

(1) a. Kim planted the tree. $\rightsquigarrow$ The tree was planted by Kim.
b. Kim looked after the tree. $\rightsquigarrow$ The tree was looked after by Kim.
c. Kim sat under the tree. $\rightsquigarrow$ The tree was sat under by Kim.

As noted by Huddleston and Pullum (2002, p. 1433), prepositional passives can be divided into two classes, depending on the syntactic function of the PP. In Type I prepositional passives, the PP is a complement whose prepositional head is idiomatically selected by the verb, as in (1b); in Type II prepositional passives as in (1c), the preposition is not part of a verbal idiom. Huddleston and Pullum, suggest that the availability of Type I prepositional passives is ultimately an idiosyncratic lexical property that must be indicated in the dictionary entries of verbal idioms (although, as far as I know, no dictionary explicitly provides this information). Type II passives, on the other hand, are subject to primarily pragmatic constraints.

The linguistic literature on prepositional passives confirms this basic description, while offering a more complex picture of the kinds of constraints involved. It is clear that the prepositional passive is much more restricted than the ordinary passive, which applies quite systematically to all transitive verbs, with a handful of lexical exceptions (e.g., **Two weeks were lasted by the strike*, **Quintuplets were had by an exhausted mother in Des Moines*). Whether a given verb + PP combination will give rise to an acceptable prepositional passive depends on various, poorly understood syntactic, semantic, and pragmatic factors. Context, usage and frequency effects,

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and lexical idiosyncrasies also play a crucial role. Previous accounts of the phenomenon rely on notions like "affectedness" or "role prominence" of the passive subject (Riddle and Sheintuch, 1983; Bolinger, 1977, 1978). These proposals are intuitively appealing, but it remains unclear how they can be satisfactorily formalized.

Many authors argue that a high degree of "cohesion" between the verb and the "stranded" preposition is a necessary condition for the well-formedness of the prepositional passive. One version of this approach suggests that V and P are in fact reanalyzed as a complex predicate (e.g., Hornstein and Weinberg, 1981). The fact that V and P typically appear immediately adjacent to one another is taken as evidence for reanalysis. The well-known exception that certain idiomatic direct objects can intervene between V and P in the prepositional passive (2) is not necessarily problematic, nor are the examples of phrasal verbs in (3).

(2) Kim made a fool of / kept tabs on Sandy. $\rightsquigarrow$ Sandy was made a fool of / kept tabs on.

(3) Kim put up with / looked down on / got rid of Sandy. $\rightsquigarrow$ Sandy was put up with / looked down on / gotten rid of.

Such examples can be dealt with by assuming that reanalysis can apply to multiword lexical items or otherwise "listed" combinations. Depending on the details of the analysis, cases involving coordinated structures may or may not be problematic:

(4) a. The delivery was signed and paid for by my assistant.
b. The obstacle will have to be crawled over or under.

The possibility of other kinds of intervening elements, however, does call the reanalysis hypothesis into question. Some marginally acceptable examples of non-idiomatic direct objects can be found in the literature (5), and modifiers and specifiers can also appear between V and P with varying degrees of acceptability (6):[1]

(5) a. ?To be whispered such dirty innuendoes about was enough to break any girl's heart.
b. ?This fork has been eaten spaghetti with.
c. ?I have never been knit a sweater for in my life.

(6) The bridge was sailed right under / walked completely across.

The contrasts illustrated in (7) also shed some light on the nature of the relevant constraint:

[1]Example (5a) is from Bolinger (1977). Example (5b) is from Davison (1980), who considers it ungrammatical, while acknowledging that "at least one" informant accepts it (p. 49).

(7) a. This bed was once napped in by Charlemagne. / ??This bed was once taken a nap in by Charlemagne.
b. This sofa was once sat on by Hadrian. / *This sofa was once had a seat on by Hadrian.

The highly cohesive light verb constructions *take a nap* and *have a seat* might be expected to allow reanalysis in the same way as (2) above, but the passive is in fact quite bad, compared to the versions with single verb synonyms. It is not clear how the notion of cohesion can be defined in order to account for this contrast. Instead, these examples point to a purely structural constraint, although again, an adequate formulation remains elusive.

Examples like (2) and (5) suggest that there is no strict syntactic constraint against the appearance of an arbitrary direct object in the prepositional passive, and that V and P are not required to be adjacent. In fact, if a direct object is involved, then it *must* intervene between V and P. Any attempt to extract or extrapose this NP results in total ungrammaticality:

(8) a. *How much of a fool was Sandy made — of?
b. *I have never been knit — for in my life such an amazing technicolor dream-sweater.

See Tseng (2006) for a more complete discussion of this "anti-adjacency" condition on prepositional passives.

2 Lexical approaches to passivization

Early generative analyses treated the ordinary passive formally as a transformation applying to the complete syntactic structure of an active sentence. In non-transformational approaches, with richer lexical representations, the passive can be analyzed as a lexical process involving only the verb, and no actual syntactic structure. A verb whose basic (active) subcategorization frame is transitive can systematically give rise to a passive verb with the appropriate "demotion" and "promotion" of the (as yet unrealized) subject and object. In HPSG, there are several ways of implementing this idea, the most familiar being the lexical rule approach.[2]

(9) **Ordinary Passive LR**

$$\begin{bmatrix} \textsc{head} & \left[\textsc{vform} \quad \textit{base}\right] \\ \textsc{arg-st} & \left\langle \mathrm{NP}_i, \mathrm{NP}_j[\textit{acc}] \right\rangle \oplus \boxed{1} \end{bmatrix} \mapsto \begin{bmatrix} \textsc{phon} & \left\langle \boxed{2} \right\rangle \\ \textsc{morph} & \left[\textsc{psp} \quad \boxed{2}\right] \\ \textsc{head} & \left[\textsc{vform} \quad \textit{passive}\right] \\ \textsc{arg-st} & \left\langle \mathrm{NP}_j \right\rangle \oplus \boxed{1} \oplus \left\langle (\mathrm{PP}_i[\textit{by}]) \right\rangle \end{bmatrix}$$

[2]For an underspecification-based account of the passive alternation, see Davis and Koenig (2000).

This (simplified) rule constructs a passive lexical entry, given a base verb that selects a direct object (i.e. an accusative NP as the second element of the ARGUMENT-STRUCTURE list). The output lexical entry has the appropriate morphophonological form (past participle)[3], it is identified as *passive* (for external selection, e.g. by the passive auxiliaries *be* and *get*), and it has a new ARG-ST list with the original elements permuted just as required.

The rule in (9) does not mention the semantic content of the verb, which is therefore assumed to remain unchanged. The verbal relation in both *Kim likes Sandy* and *Sandy is liked by Kim* is $\mathsf{like}(k, s)$. Only the syntactic configuration of the two arguments is different. I leave aside the information structural aspects of passivation in this paper, but these effects would also be represented in the output of the lexical rule.

2.1 Extension to Type I prepositional passives

This kind of lexical rule analysis presented above has been standard in HPSG since Pollard and Sag (1987). The approach can be adapted to Type I prepositional passives, in which the preposition is lexically selected by the verb (via PFORM selection).

(10)
$$\left[\begin{array}{ll}\textsc{head} & \left[\textsc{vform} \quad \textit{base}\right] \\ \textsc{arg-st} & \left\langle \mathrm{NP}_i, \boxed{1}\,(\mathrm{NP}[\textit{canon}]), \mathrm{PP}_j[\boxed{2}\,\textit{pform}]\right\rangle \oplus \boxed{3}\end{array}\right]$$
$$\mapsto \left[\begin{array}{ll}\textsc{phon} & \left\langle \boxed{4}\right\rangle \\ \textsc{morph} & \left[\textsc{psp} \quad \boxed{4}\right] \\ \textsc{head} & \left[\textsc{vform} \quad \textit{passive}\right] \\ \textsc{arg-st} & \left\langle \mathrm{NP}_j, \boxed{1}, \mathrm{P}\left[\begin{array}{ll}\textsc{pform} & \boxed{2} \\ \textsc{comps} & \left\langle \mathrm{NP}_j\right\rangle\end{array}\right]\right\rangle \oplus \boxed{3} \oplus \left\langle (\mathrm{PP}_i[\textit{by}])\right\rangle\end{array}\right]$$

The construction of the passive ARG-ST list is more complicated in this case, because of the stranded preposition. Whereas the active verb selects a saturated PP argument, the passive verb selects a COMPS-unsaturated prepositional argument. The rule allows an intervening direct object, specified as *canonical* to account for the data in (2), (5), and (8).[4]

Like the original passive lexical rule (9), this rule assumes that the semantics of the verb remains unchanged. It should be noted that this analysis requires a further assumption that the preposition in Type I prepositional passives is semantically empty, cf. the treatment of "case-marking"

[3] I am assuming a paradigm-based approach to morphology, in which the MORPH value of a verb encodes all of its inflected forms as the values of the attributes BASE, 3SG, PAST, PSP, etc.

[4] The phrasal verb examples in (3) are not accommodated in this simplified formulation.

prepositions in Pollard and Sag (1994). This makes the index of the prepositional object j visible on the verb's ARG-ST list and available for semantic role assignment in the verbal relation. For example, *Kim looks after Sandy* (and its passive version *Sandy is looked after by Kim*) expresses a single semantic relation look-after(k, s), rather than the conjunction (or some other combination) of a look relation and an after relation. This analysis seems correct for this example, although in general the possibility of a preposition being both syntactically selected via PFORM and contributing its own semantics cannot be excluded (Tseng, 2001), and such cases are present additional complications (see the following section).

A side issue to be addressed here is the proper representation of semantically empty prepositions, such as *after* in this example. According to the analysis of Pollard and Sag (1994), such prepositions share the CONTENT value of their complement. In the analysis of Tseng (2001), on the other hand, empty prepositions are represented with empty content, and the complement's semantics is propagated to the PP by semantic composition constraints applying to the head-complement phrase. The result at the PP level is identical: in *Kim looks after Sandy*, the PP ends up with the semantics of the NP *Sandy*. In the passive, however, the head-driven CONTENT-copying analysis of Pollard and Sag (1994) runs into problems. The stranded preposition in the output of rule (10) would still have nominal semantics, shared with its unrealized complement. This means that it would be subject to binding principles. Given the coindexation indicated in (10), we would have to conclude that the preposition is reflexive, by Principle A. Alternatively, the stranded preposition (and its unrealized complement) could be assigned an *expletive* index instead (no longer coreferent with the passive subject). Neither of these options has any empirical motivation.[5] An analysis in which *after* simply has an empty content value avoids all of these difficulties.

2.2 Type II passives with complement PPs

Turning now to Type II prepositional passives, where the preposition is not selected idiomatically by the verb, the lexical approach runs into problems. There are two cases to consider, depending on the syntactic function of the PP (complement or adjunct). The first case is discussed here. The adjunct case will be discussed afterwards in section 3.

If the PP is a complement—e.g. the directional complement of a verb of motion, as in (6) above—then the prepositional passive involves a reconfiguration of the ARG-ST list along the same lines as (10), but this move is complicated by the fact that the preposition is semantically contentful. In

[5] A third possibility would be to treat the preposition as *intransitive*, like a phrasal verb particle, but this is difficult to motivate for forms like *of* and *for* that appear frequently in prepositional passives, but never as phrasal verb particles.

the semantic representation of *Kim drove past the monument*, for example, there must be a drive relation and a past relation. The precise definitions of these two relations are open to debate (in particular the identities of the internal argument of drive and the external argument of past), but it seems clear that the NP *the monument* does not receive a semantic role directly from the verb. Assuming the same semantics for the passive sentence *The monument was driven past by Kim*, we have a problem because the verb *driven* selects a referential subject, but assigns it no semantic role.

In GB terms, this constitutes a violation of the theta criterion. While this principle has no direct counterpart in HPSG, the idea that all arguments must be assigned a semantic role is captured in the Raising Principle. This is a part of HPSG theory that has received relatively little attention[6] and needs updating in light of developments since Pollard and Sag (1994), but the basic generalization encoded in the Raising Principle remains valid. According to this principle, formulated as a constraint on lexical entries, a verb must normally assign a semantic role to all of its referential (non-expletive) arguments. The only exception is when an argument is inherited (raised) from another element on the verb's ARG-ST (originally SUBCAT) list. In other words, the argument is a syntactic dependent of the verb, but in fact orginates in a "downstairs" constituent (where it is left unrealized).

In our Type II prepositional passive example *The monument was driven past*, in order to avoid a Raising Principle violation, the passive subject NP must be analyzed as a raised argument.[7] In other words, the lexical rule deriving the passive participle *driven* must be defined as follows:

(11)
$$\begin{bmatrix} \text{HEAD} & \left[\text{VFORM} \quad \textit{base}\right] \\ \text{ARG-ST} & \left\langle \text{NP}_i, \boxed{1}\,(\text{NP}[\textit{canon}]), \text{PP}\right\rangle \oplus \boxed{2} \end{bmatrix}$$
$$\mapsto \begin{bmatrix} \text{PHON} & \left\langle \boxed{3} \right\rangle \\ \text{MORPH} & \left[\text{PSP} \quad \boxed{3}\right] \\ \text{HEAD} & \left[\text{VFORM} \quad \textit{passive}\right] \\ \text{ARG-ST} & \left\langle \boxed{4}\,\text{NP}_j, \boxed{1}, \text{P}\left[\text{COMPS} \quad \left\langle \boxed{4}\,\text{NP}_j \right\rangle\right] \right\rangle \oplus \boxed{2} \oplus \left\langle (\text{PP}_i[\textit{by}]) \right\rangle \end{bmatrix}$$

The main difference with respect to the rule in (10) is that the right-hand side of this rule requires *synsem*-sharing between the passive subject and the unrealized prepositional object, rather than just coindexation.

[6] But see Przepiórkowski and Rosen (2005), for example.

[7] The description of the downstairs constituent in the original formulation of the Raising Principle will also need to be updated to refer not to the SUBCAT list, but to VALENCE attributes. In ordinary raising constructions, the raised argument corresponds to the downstairs subject. For prepositional passives, it is an unrealized downstairs complement that is raised.

One apparent problem faced by this raising analysis is the nominative vs. accusative case mismatch between the two NPs in the output of (11). I follow Przepiórkowski (1999) in assuming that when an argument appears on more than one ARG-ST list, case assignment principles apply only to the "highest" occurrence. For example, in *The monument was driven past*, the *synsem* corresponding to the NP *the monument* appears on three different ARG-ST lists: that of the preposition, the participle, and the finite auxiliary. But the CASE value of this *synsem* object is only instantiated once, with the value *nominative*, by case assignment principles applying to the ARG-ST list of *was*.

2.3 A unified rule

The rules in (10) and (11) were defined to apply to different classes of verbs (Type I verbs with a PP complement headed by an idiomatically selected preposition vs. Type II verbs with a PP complement headed by a freely selected preposition), but there is no clear boundary between these two classes. As they stand, the left-hand side descriptions of the two rules overlap, and it is doubtful that they could be enriched to restrict their application appropriately. Besides, the two rules have very similar effects, so the distinction may be unnecessary after all.

We could simply collapse the two rules by analyzing Type I prepositional passives like *Sandy was looked after* as instances of raising as well. At first sight, this would present a different sort of violation of the Raising Principle, because raised arguments are not supposed to be assigned a semantic role in the "upstairs" argument structure. It was assumed above in section 2.1, that *Sandy* receives a semantic role from the verb (since the preposition is semantically empty). The original Raising Principle was not formulated with such examples in mind, and an updated version of the constraint should allow this configuration, since the raised argument does end up with a unique semantic role.

We can therefore propose the following general rule for prepositional passives involving complement PPs:

(12) **Prepositional passive LR (complement PP)**

$$\begin{bmatrix} \text{HEAD} & \left[\text{VFORM} \quad \textit{base}\right] \\ \text{ARG-ST} & \left\langle \text{NP}_i, \boxed{1}\,(\text{NP}[\textit{canon}]), \text{PP}[\boxed{2}\,\textit{pform}] \right\rangle \oplus \boxed{3} \end{bmatrix}$$

$$\mapsto \begin{bmatrix} \text{PHON} & \left\langle \boxed{4} \right\rangle \\ \text{MORPH} & \left[\text{PSP} \quad \boxed{4}\right] \\ \text{HEAD} & \left[\text{VFORM} \quad \textit{passive}\right] \\ \text{ARG-ST} & \left\langle \boxed{5}\,\text{NP}_j, \boxed{1}, \text{P}\begin{bmatrix}\text{PFORM} & \boxed{2} \\ \text{COMPS} & \left\langle \boxed{5}\,\text{NP}_j \right\rangle\end{bmatrix} \right\rangle \oplus \boxed{3} \oplus \left\langle (\text{PP}_i[\textit{by}]) \right\rangle \end{bmatrix}$$

This rule is identical to (11), with the addition of the sharing of PFORM values between the input and output specified in (10). This ensures that if the lexical form of the preposition is idiomatically selected by the active verb, the passive verb will select the same preposition. Semantically contentful prepositions that are not idiomatically selected are assumed to bear the feature [PFORM *other*] (Tseng, 2001). The rule therefore prevents a semantically empty preposition in the input from becoming semantically contentful in the output, and vice versa.[8]

3 Adjunct prepositional passives

Thus far, the kinds of prepositional passives we have seen discussed can be analyzed in HPSG by adapting the familiar lexical rule approach (and with some adjustments to existing constraints such as the Raising Principle). Type II prepositional passives involving PP adjuncts, such as *The tree was sat under (by Kim)*, on the other hand, present serious difficulties for lexical accounts. In principle, adjuncts are not selected by the verb and are not accessible in the lexical description of the verb. It would seem impossible, at first sight, to derive a lexical entry for the passive verb *sat* starting from the intransitive verb *sit*, since the subject of passive *sat* originates in an inaccessible PP modifier.

A technical solution is available, in the form of the DEPENDENTS list, or "extended argument structure", of Bouma et al. (2001). This attribute was introduced to allow lexical heads to impose constraints on their adjuncts, by treating these adjuncts effectively as syntactically (but not semantically) selected complements. This move has been controversial within HPSG (see

[8]The rule in (12) does not indicate the linking of the stranded P argument in the argument structure of the output verb. The complete formulation would require a disjunction between contentful Ps (which are assigned a semantic role by the verb), and empty Ps (which are not).

Levine 2003, and the response by Sag 2005), and could be challenged from a conceptual point of view for abandoning conventional notions of selection and argument structure, making too much information accessible at the lexical level.

If we accept the adjuncts-as-complements analysis, the lexical rule approach sketched in the previous section can be easily extended to all (Type I and Type II) prepositional passives. We would simply need to modify rule (12) to refer to the DEPS list instead of ARG-ST. Moreover, the Raising Principle would need to be modified (again), to apply to DEPS, since the passive subject does not receive a semantic role from the verb or from any of the verb's lexical arguments. This is an apparently minor change, but in fact it would result in an undesirable broadening of the contexts where unassigned arguments are allowed. This modified constraint would incorrectly allow examples like the the following:[9]

(13) a. *Kim sneezed it while raining.
(= 'Kim sneezed while it was raining.')

b. *Sandy fainted so much beer after drinking.
(= 'Sandy fainted after drinking so much beer.')

There does not appear to be independent motivation for this move.

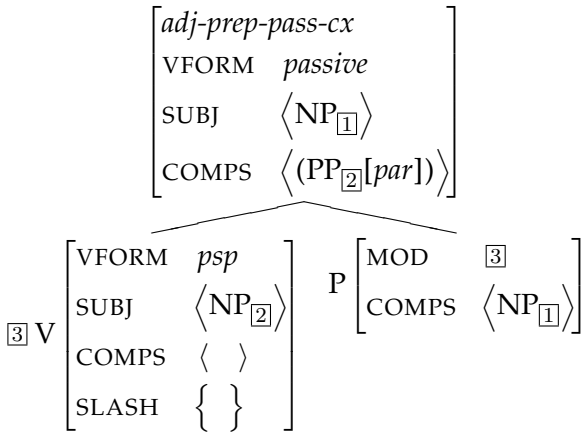
The technical difficulties for the lexical account outlined here are probably not insurmountable, and the conceptual objections to the DEPS approach can perhaps be argued away. It does seem worthwhile, nevertheless, to explore alternative analyses of prepositional passives involving adjunct PPs.

3.1 A constructional approach

The remainder of this section is therefore devoted to a proposed analysis of adjunct-based prepositional passives as instances of a special construction, *adjunct-prep-passive-cx*. The relevant constraint is responsible for licensing the VP consisting of the participle, the stranded preposition, and any intervening elements (certain direct objects, phrasal verb particles, specifiers of P).

[9] More accurately, the DEPS version of the Raising Principle would predict the existence of verbs of this type (since **sneeze it* and **faint so much beer* can of course be excluded on other grounds).

(14) **Prepositional passive VP construction (adjunct PP)**



The first thing to notice is that the verb is actually an *active* past participle ([VFORM *psp*]), not a passive verb form ([VFORM *passive*], as in the output of the lexical rules in the previous section). Morphologically, English past participles and and passive participles are identical in form, and they have the same semantic content (linked in different ways to the syntactic arguments). Type II prepositional passives can involve intransitive verbs like *go* that never participate in the ordinary passive; on the other hand, all verbs have a past participle form.[10]

Using the active participle also sidesteps the problem, discussed above, of constructing a passive participle that would violate the theta criterion (or HPSG Raising Principle): in the lexical entry of the verb, all arguments are assigned a semantic role. The COMPS and SLASH values of this V daughter in (14) are empty, ensuring that the direct object (if any) is realized canonically.[11]

The other daughter of the construction is specified to be a COMPS-unsaturated prepositional projection (possibly including modifiers or a specifier) that modifies the verb. At the constructional level, the semantic indices of the verb's unrealized subject and of the preposition's unrealized complement are used to construct the valence requirements of the entire construction (note the value of VFORM). The resulting phrase is a passive VP that can appear in all passive contexts and be coordinated with other passive VPs (here, a Type I passive and an ordinary passive):

(15) The birthday cake was [sat on, set fire to, and thrown away] by Kim.

[10] Defective verbs, like modals, with no past participle, also fail to participate in the prepositional passive. Moreover, some verbs may be idiosyncratically blocked from appearing in the adunct prepositional passive construction, just as some transitive verbs (e.g. *cost* or *last*, mentioned at the beginning of section 1) are excluded from the ordinary passive.

[11] Additional constraints need to be incorporated to block the realization of other kinds of complements, like PPs, but more empirical work needs to be done to reveal the nature of these constraints.

Given the redefinition of the VFORM and VALENCE values of the mother, the construction must be considered non-headed, and the full definition would have to specify all of the features of the mother (in particular, its CONTENT value). It would also be possible to adopt the Generalized Head Feature Principle (the default principle of Ginzburg and Sag 2001) and identify the participial projection as the head daughter. This would allow general propagation mechanisms (e.g. the Semantics Principle) to fill in some of the information at the constructional level. The choice is essentially notational and has no consequences for the proposed analysis.

3.2 Extending the analysis to complement PPs

The constructional approach can be adapted to prepositional passives involving complement PPs. The lexical rule analysis presented for these cases in section (2.3) is not wholly unproblematic, (nor particularly elegant). The relevant constructional constraint is shown below:

(16) **Prepositional passive VP construction (complement PP)**

$$\begin{bmatrix} \textit{comp-prep-pass-cx} \\ \text{VFORM} \quad \textit{passive} \\ \text{SUBJ} \quad \langle \text{NP}_{\boxed{1}} \rangle \\ \text{COMPS} \quad \langle (\text{PP}_{\boxed{2}}[\textit{par}]) \rangle \end{bmatrix}$$

$$\text{V}\begin{bmatrix} \text{VFORM} & \textit{psp} \\ \text{SUBJ} & \langle \text{NP}_{\boxed{2}} \rangle \\ \text{COMPS} & \left\langle \text{PP}\left[\text{PFORM} \quad \boxed{3}\right] \right\rangle \\ \text{SLASH} & \{\ \} \end{bmatrix} \qquad \text{P}\begin{bmatrix} \text{PFORM} & \boxed{3} \\ \text{COMPS} & \langle \text{NP}_{\boxed{1}} \rangle \end{bmatrix}$$

In this construction, the past participle projection is specified to be COMPS-unsaturated, and the unrealized PP complement "controls" the P daughter of the construction via the shared PFORM value.[12]

The similarities between the constructions in (14) and (16) can be captured in the definition of a common supertype, resulting in a small constructional hierarchy of English prepositional passives. It seems appropriate to incorporate the non-syntactic factors that determine the well-formedness of the prepositional passive (context, modality, pragmatic and stylistic effects) at the level of this constructional supertype.

[12]Some form of CONTENT sharing is also necessary, in order to ensure the correct assignment of semantic roles by the verb. The revelant disjunctive constraint (for semantically contentful vs. empty prepositions) is not included here (see also fn. 8).

3.3 Extending the analysis to ordinary passives

A natural next step is to consider applying the constructional analysis of prepositional passives to ordinary NP passives. The relevant definition, taking an active past participle and building a passive VP construction is given here:

(17) **Ordinary NP passive VP construction**

$$\begin{bmatrix} \textit{np-passive-cx} & \\ \textsc{vform} & \textit{passive} \\ \textsc{subj} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \\ \textsc{comps} & \left\langle (\text{PP}_{\boxed{2}}[\textit{par}]) \right\rangle \end{bmatrix}$$
$$\Big| \quad \text{V} \begin{bmatrix} \textsc{vform} & \textit{psp} \\ \textsc{subj} & \left\langle \text{NP}_{\boxed{2}} \right\rangle \\ \textsc{comps} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \end{bmatrix}$$

At first sight, this looks like a variant of the familiar passive lexical rule expressed using tree notation. However, the daughter in this unary construction ("head-only" in the terms of Ginzburg and Sag 2001) is not necessarily lexical. As in the constructions defined above, the V daughter represents a participial projection that can include modifiers and other dependents (e.g. *stolen secretly from Kim*, *elected president for the third time*). Note that the empty SLASH requirement of (14) and (16) is absent here. The construction then permutes the unexpressed subject and direct object of the VP as expected and instantiates the feature [VFORM *passive*] on the mother.

The main advantage of this analysis over the lexical rule approach is that a single participial lexical entry can be used in both active and passive sentences. This is consistent with English verbal morphology, as mentioned already, although the fact that some verbs are used in compound past tenses but not in the passive (see fn. 10) still needs to be encoded lexically. Another advantage is the possibility of organizing all types of passive structures into a hierarchy of constructions, with shared constraints expressed just once at the appropriate point in the hierarchy.[13]

The analysis presented here is reminiscent of the object-to-subject raising analyses of the passive in German surveyed (and argued against) in Müller (2001). Those proposals (e.g. Pollard, 1994; Kathol, 1994; Müller, 1999) are also motivated in part by the economy of using a single participial entry in active and passive structures. These are all lexical analyses, however, and they rely on a specially defined object-to-subject raising passive

[13]It should be noted that some implementations of lexical rules in HPSG (e.g. Meurers, 2000) also allow generalizations over lexical rule types to be expressed.

auxiliary to build the correct surface structure. As Müller (2001) points out, this is undesirable because there are many contexts where the participle has a passive interpretation in the absence of any auxiliary.

The constructional approach proposed here for English passives avoids this problem, because the constructions apply at the VP level, before combination with the passive auxiliary (which can be a simple subject-to-subject raising verb, as in standard analyses).

4 Concluding remarks

I have argued that the properties of English prepositional passives, particularly those involving adjunct PPs, motivate a treatment in terms of constructions, although a fully lexical approach (e.g. relying on lexical rules) is technically available. The constructional analysis avoids undesirable interactions with the HPSG Raising Principle, and allows the same lexical entry to be used for the particple in both active and passive structures.

The construction-based approach for adjunct PP prepositional passives can be extended to prepositional passives involving complement PPs, and then to ordinary NP passives, resulting in a hierarchy of passive constructions in English.

For the moment, the arguments in favor of lexical vs. constructional approaches are mostly conceptual and theory-internal: How much information about the context should be encoded and accessible in the lexical entry of the head verb? If constraints like the Subcategorization Principle and the Head Feature Principle are no longer applied strictly to all (headed) phrases, what are the restrictions on possible constructions? These questions and other concerns about the descriptive power of HPSG need to be addressed. At the same time, the empirical consequences of the choice between lexical and constructional approaches to the passive must be explored more fully.

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