Three Types of English Pseudo-passives: A Lexicalist Perspective[1]

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English is peculiar in that it allows some of the prepositional verbs (multi-words consisting of a verb and a preposition) to be passivized. According to the formal properties of these prepositional verbs that undergo such a pseudo-passivization process, they can be classified into three different types: intransitive, particle, and transitive prepositional verbs. These three types of prepositional verbs undergo pseudo-passive controlled by various grammatical constraints: lexical selection, unergativeness, affectedness, characterization, and so forth. This paper examines the formal properties of these three different types and provides a lexicalist approach capturing the possibility of pseudo-passive.

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1. Basic Facts

English allows prepositional verbs to be passivized as illustrated in the following:

(1) a. You can *rely on* Ben.
     b. Ben can be *relied on*.
(2) a. They *talked about* the scandal for days.
     b. The scandal was *talked about* for days.

As we noted here, the prepositional object *Ben* and *the scandal* in the active can function as the subject of the passive sentence. Notice that such pseudo-passives (or often called prepositional passives) are possible with the verbs selecting a PP:

(3) a. The plan was *approved of* by my mother. (My mother approved of the plan.)
   b. The issue was *dealt with* promptly. (They dealt with the issue promptly.)
   c. That's not what's being *asked for*. (That's not what they are asking for.)

(4) a. *Boston was *flown to*. (They flew to/near/by Boston.)
   b. *The capital was *gathered near* by a crowd of people. (A crowd of people gathered near/at the capital.)
   c. *The hot sun was *played under* by the children. (The children played under/near the hot sun.)

The prepositions in (3) are all selected by the main verbs (no other prepositions can replace them). Meanwhile, each preposition in (4) is not selected by the main verb as attested by the possibility of being replaced by another preposition in the active.

Issues become more complicated when considering cases where the prepositional object of the unspecified PP can be promoted as the subject of a passive:

(5) a. This bed was slept in. (He slept in this bed.)
   b. My hat has been sat on. (He has sat on my hat.)
   c. The bridge has already been flown under. (He has already flown under the bridge).

Verbs like *sleep*, *sit* and *fly* require no specified PP, as can be observed from the possibility of replacing the following preposition with another one:

(6) a. John slept in/under/beside the bad.
   b. John sat on/under/behind the hat.
   c. The airplane flew under/over/beside the bridge.

This paper tries to identify the types of pseudo-passive constructions and see what kind of grammatical properties license English pseudo-passive. The paper also tries to figure out how such properties are interwoven together in generating them. It then develops a formalized, lexicalist analysis for the identified constructions.

2. Three Different Types of Pseudo-Passives

Prepositional verbs (P-verbs) requiring a specified PP can be classified into three types depending on the combinatorial possibilities of the verbs involved:

(7) a. Intransitive P-verb: They often <u>speak of</u> King's Canterbury.
     b. Particle P-verb: They <u>looked up to</u> the professor.
     c. Transitive P-verb: The students <u>paid attention to</u> the teacher.

   As given here, intransitive P-verbs require just a specified PP whereas particle P-verbs select both a particle and a specified PP. Meanwhile, transitive P-verbs subcategorize for an object NP and a specified PP. The prepositional object in each of these three cases can undergo passivization:

(8) a. King's Caterbury is spoken of very highly at the moment.
     b. The professor was looked up to by them.
     c. The teacher was paid attention to.

As noted in Huddleston and Pullum (2002) and others, however, not every P-verb can undergo passivization:

(9) a. *Both capital and interest were <u>consisted of</u> the repayments.
     b. *Patience was <u>stood for</u> by the word.
     c. *Fish are <u>abounded in</u> by the river.

   Even though *consist of, stand for, abound in* all seem to be P-verbs in the sense that the preposition is selected by the preceding verb, they do not undergo pseudo-passive (cf. Hornstein and Weinberg 1981)
   Particle P-verbs also behave similarly: only a limited set of particle P-verbs can undergo passivization:

(10) a. My appalling behavior was made up for.
     b. The neighbor's noise was put up with.
(11) a. *My sister wasn't <u>gotten along with</u>.
     b. *His parents' expectations were <u>kept up with</u>.

It appears that *put up with* and *keep up with* are minimally different, but only the former is natural in passive.

Transitive P-verbs selecting an object NP and a specified PP are a bit more complex: they can be classified into four different sub-groups:

(12) No passive at all:
    a. *Patience was lost with the secretary.
    b. *The secretary was <u>lost patience with</u>.
(13) Only object NP passivizable:
    a. Doubt was cast on his motives.
    b. *His motives were <u>cast doubt on</u>.
(14) Pseudo-passive only:
    a. *Sight was lost of our goal.
    b. Our goal was <u>lost sight of</u>.
(15) Either the object NP or the prepositional object is passivizable:
    a. Good use was made of the extra time.
    b. The extra time was made good use of.

The question that follows from the observations we have made so far is what kind of constraints distinguish between passivizable and non-passivizable P-verbs. Passivizable transitive P-verbs here are somewhat idiomatic. When part of the transitive P-verb is compositional, it appears that the prepositional object is usually not passivized. For example, verbs like *remind* and *blame* select an object NP and a specified PP, and the meaning of the VP projected from such a verb is compositional. This means that the prepositional object cannot be promoted as the passive subject. This is what we observe as illustrated in the following:

(16) a. Mary reminded him of her old sister.
    b. The police blamed the accident on the weather.
(17) a. *Her old sister was reminded him of.
    b. *The weather was blamed the accident on.

In what follows, we will see that the constraints governing the possibility of pseudo-passives are much more subtle and interacting in the three types of pseudo-passives.

3. Interactive Constraints
3.1 Lexical Constraints

There exist various constraints in pseudo-passives. In terms of meaning, the verb-preposition combination that undergoes passive expresses a semantic unit: *marched throug* means 'crossed', *paid for* 'purchased', *gone over* 'examined', *looked on* 'regarded', *spoken of* 'mentioned' (Bresnan 1982, Huddleston and Pullum 2002). The constraint on the semantic unity is related to the transitivity between subject and prepositional object. That is, the prepositional verb syntactically and semantically behaves like a transitive verb. This is what we can see from the examples in (18):

(18) a. The fields look like they've been marched through by an army.
　　 b. Everything is being paid for by the company.
　　 c. Your books needed to be gone over by an accountant.
(19) a. *No reason was left for.
　　 b. *A river is lived over by the miller.
　　 c. *The operation was died after.

However, there exist many examples from which we can hardly find any semantic unity from the verb and its preposition (as noted by Riddle and Sheintuch 1982) as observed from some corpus examples:

(20) a. What hurts the civilized man is smiled at by the savage.
　　 b. Babbie is dressed for a specified event.

　　In addition, not all intransitive P-verbs with a specified preposition participate in pseudo-passive. In particular, we can observe that while unergative P-verbs can easily occur in P-passive, unaccusative P-verbs (like *appear, die, come, melt*) cannot (cf. Perlmutter and Postal 1984):

(21) a. *The horizon was appeared on by a pirate ship.
　　 b. *The border was come to.
　　 c. *This bowl was melted in (by the chocolate).

The unaccusative restriction can capture a contrast we find from examples like the following:

(22) a. The desk was sat on by the gorilla.
   b. *The desk was sat on by the lamp.

The verb *sat* in (22a) is an unergative verb since it describes a volitional action whereas the one in (22b) is an unaccusative verb with no volitional action.

   However, the unaccusative restriction is not the whole story when considering examples like the following (see Kuno and Takami 2004):

(23) a. *Boston was arrived in late at night.
   b. The conclusion was arrived late at night.
   c. The expected result was eventually arrived at night.

It is hard to claim that the passive verb *arrived* in (23b) and (23c) involves any volitional activities, indicating that we cannot solely rely on the lexical properties or semantics of main verbs in determining the possibility of pseudo-passivization.

3.2 Semantic and Pragmatic Constraints
3.2.1 Affectedness Condition

As noted by Bolinger 1977, Davison 1980, Goh 2003, among others, one way to account for the contrast in (23) is to refer to the 'affectedness' condition. That is, the promoted subject in pseudo-passives is affected by the action represented by an (overt or unexpressed) agent. The subject 'I' in (23a) can be affected by the stranger (possibly a panhandler), but not by a train. This 'affectedness' condition can be further found in canonical passives (cf. Kim and Sells 2008).[2]

(24) a. *Six inches were grown by the boy.
   b. *A pound was weighed by the book.
(25) a. The beans were grown by the gardener.
   b. The plums were weighed by the greengrocer.

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2) In Kuno and Takami (2004), the affectedness condition is captured in terms of subject 'involvement'.

The main difference between possible and impossible examples here is that the individual referred to by the passive subject is acted upon by an agent. That is, the passive subject is physically or psychologically affected by the action performed by the agent. For example, six inches cannot be affected by the action performed by the agent but beans are under the direct influence from the action denoted by the gardener (cf. Bolinger 1975, 1977, 1978, Goh 2001, 2003, Kim and Sells 2008). We can also observe that the 'affectedness' condition is one major constraint in the pseudo-passive.

(26) a. *San Francisco has been lived in my brother.
  b. The house has been lived in by several famous personages.
(27) a. *Seoul was slept in by the businessman last night.
  b. This bed was surely slept in by a huge guy last night.

In (26a), San Francisco is just a location that can not be affected by a person's living there. On the other hand, the house in (26b) can be affected by the action of living. In addition, it is hard to imagine that Seoul in (27a) is affected by the action of sleeping in, but the bed in (27b) can be considered to be inflicted by the sleeping action.

 Though the 'affectedness' condition works out for many pseudo-passive cases, we can observe that additional factors also exist. Consider the contrasts in the following:

(28) a. Four is equalled by two and two.
  b. He is equalled in strength by no one.
(29) a. A mile to work was run by him.
  b. A mile was first run in four minutes by Bannister.

It is hard to assign any affectedness role to the subject of the grammatical examples (28b) or (29b).

3.2.2 Characterization Condition

The constraint related to the examples in (28) and (29) concerns the fact that the promoted subject obtains some characteristic quality resulting from the event described (cf. Davison 1980, Goh 2001, 2003, Huddleston and Pullum 2002, Kuno and Takami 2004). Observe the following

contrast:

(30) a. *This statue was stood beside by John.
    b. No statue should be stood beside in this park.

Once again it is hard to assume that the subject *no statue* in (30b) is affected by the action described by the following VP *stood beside in this park*. Instead, the subject is characterized by the VP. A similar fact can be observed in the following contrast:

(31) a. *Seoul was walked around by his father.
    b. Seoul can be walked around in a day.
(32) a. *The hotel was stayed in by my sister.
    b. The hotel can be stayed in by foreigners.

Walking around Seoul in a day and staying in the hotel both can characterize the general or characteristic property of Seoul and the hotel. However, if these actions are performed by a particular individual such as his father or sister, they cannot represent the general properties of the subject referent.

In sum, as observed in the previous literature (cf. Huddleston and Pullum 2002), we assume the following constraints controlling the license of English pseudo-passives:

(33) Constraints in the Pseudo-Passive:
    In the prepositional verb construction, the prepositional object of an adjunct PP can be passivized when the VP either characterizes the subject referent or describes an affected condition of its property.

4. A Lexicalist Analysis
4.1 Canonical Examples

It is well-known that not all transitive verbs can undergo canonical passivization. As noted before, even in canonical examples, we need to refer to the lexical or semantic properties of the transitive verbs. For example, transitive verbs like *resemble* do not have any passive counterparts:[3]

(34) a. The model resembles Kim in nearly every detail.

    b. *Kim is resembled by the model in nearly every detail.

There are also verbs like *born, rumor, say* and *repute* which are used only in the passive, as seen in the following contrast (cf. Bach 1980, Baker et al. 1989, Chomsky 1981, Radford 1988).

(35) a. I was born in 1970./*She bore me in 1970.

    b. It is rumored that he is on his way out./*They rumored that he is on his way out.

    c. John is said to be rich./*They said John to be rich.

These lexical idiosyncrasies indicate that we need to refer to lexical properties, rather than to syntactic operations such as movement. It seems that such lexical idiosyncracies can be better treated in terms of a lexical process which allows us to refer to the lexical and semantic properties of the verb in question. One way to state this is adopting a lexical rule like the following, represented in the feature structure of HPSG:

(36) Passive Lexical Rule:

$$
\begin{bmatrix} tran-v \\ \text{SUBJ } \langle \text{XP}_i \rangle \\ \text{COMPS } \langle \text{XP}_j, \dots \rangle \end{bmatrix} \Rightarrow \begin{bmatrix} pass-tran-v \\ \text{HEAD|VFORM } pass \\ \text{SUBJ } \langle \text{XP}_j \rangle \\ \text{COMPS } \langle \dots \left(\text{PP}_i[by] \right) \rangle \end{bmatrix}
$$

The lexical rule specifies that a transitive verb (*tran-v*) can be turned into a passive transitive verb (*pass-tran-v*) selecting the input verb's object (the first element in the COMPS list) as its subject (SUBJ) and the input verb's subject as its optional PP complement. This rule basically allows the transitive object to be promoted as the passive subject, whereas its subject is demoted as an optional oblique complement.

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3) Part of the discussion here follows Kim and Sells (2008).

Let us see how this lexical rule-based system works with one simple example:

(37) a. John sent her to Seoul.
    b. She was sent to Seoul.

The active verb *send* is turned into the passive verb *sent* by the Passive Lexical Rule in (36):

(38)

$$
\begin{bmatrix}
tran-v \\
\langle \text{send} \rangle \\
\text{HEAD} | \text{POS } verb \\
\text{SUBJ } \langle \text{NP}_i \rangle \\
\text{COMPS } \langle \text{NP}_j, \boxed{2}\text{PP}[to] \rangle
\end{bmatrix}
\Rightarrow
\begin{bmatrix}
pass-tran-v \\
\langle \text{sent} \rangle \\
\text{HEAD} \begin{bmatrix} \text{POS } verb \\ \text{VFORM } pass \end{bmatrix} \\
\text{SUBJ } \langle \boxed{1}\text{NP}_j \rangle \\
\text{COMPS } \langle \boxed{2}, \left(\text{PP}_i[by] \right) \rangle
\end{bmatrix}
$$

As seen here in the output form, the passive *sent* takes a SUBJ whose index value is identical to that of the first element of the COMPS list in the input. The passive verb *sent* also inherits the PP[*to*] complement, tagged $\boxed{2}$, and selects an optional PP whose index value is identical to the SUBJ of the input.[4] This output lexical entry will then license the following structure for (37b):

---

(39)

```
                              S
                          [VFORM fin]
                         /            \
                     ②NP              VP
                      |             ⎡ VFORM fin  ⎤
                      N             ⎢ SUBJ ⟨②⟩   ⎥
                      |             ⎣ COMPS ⟨ ⟩  ⎦
                     She            /           \
                                   V            VP
                            ⎡ VFORM fin ⎤   ⎡ VFORM pass ⎤
                            ⎢ SUBJ ⟨②⟩  ⎥   ⎢ SUBJ ⟨②⟩   ⎥
                            ⎣ COMPS ⟨⑤⟩ ⎦   ⎣ COMPS ⟨ ⟩  ⎦
                                 |          /          \
                                was        V           ③PP
                                    ⎡ VFORM pass ⎤      /\
                                    ⎢ SUBJ ⟨②⟩   ⎥     /  \
                                    ⎣ COMPS ⟨③⟩  ⎦    / to Seoul\
                                         |
                                        sent
```
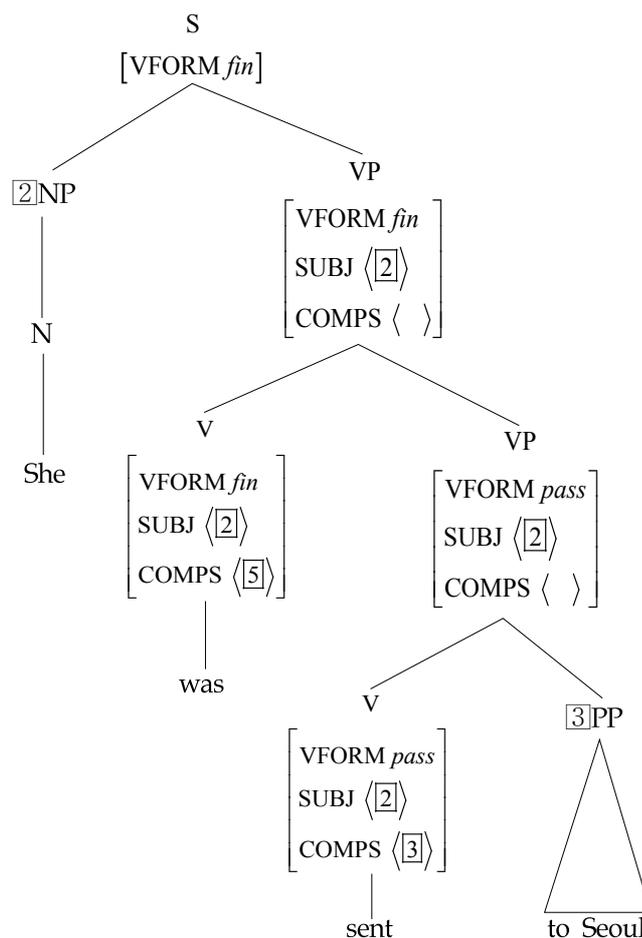
As given in the structure, the passive *sent* combines with its PP[*to*] complement, forming a VP that still requires a SUBJ. This VP functions as the complement of the auxiliary *be (was)*.[5] The SUBJ requirement on *be* is passed up to the highest VP. When this VP combines with the subject *she* in accordance with the Head-Specifier Rule, the well-formed passive sentence is complete.[6]

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5) The auxiliary verb *be* is a raising verb whose subject (SUBJ value) is identical to its VP complement's subject *She*.

6) For the constraints on other grammar rules such as the Head-Complement Rule and the Head-Modifier Rule, see Sag et al. (2002) and Kim and Sells (2008).

4.2 Intransitive P-verbs

How then can we generate pseudo-passives? We first need to ensure that the object of the prepositional verb is promoted to the subject in the passive, as represented in the following:

(40) Pseudo-Passive Lexical Rule (to be revised):

$$
\begin{bmatrix}
prep\text{-}v \\
\text{SUBJ } \langle \text{NP}_i \rangle \\
\text{COMPS } \langle \text{PP}_j \begin{bmatrix} \text{FORM } \boxed{4} \end{bmatrix} \rangle
\end{bmatrix}
$$

$$
\Rightarrow
\begin{bmatrix}
pass - prep - v \\
\text{VFORM } pass \\
\text{SUBJ } \langle \text{NP}_j \rangle \\
\text{COMPS } \langle \text{P} \begin{bmatrix} \text{LIGHT } + \\ \text{FORM } \boxed{4} \end{bmatrix}, \left(\text{PP}_i \begin{bmatrix} \text{FORM } by \end{bmatrix} \right) \rangle
\end{bmatrix}
$$

This rule ensures that a prepositional verb (*prep-v*) can have a counterpart passive verb.[7] This passive verb selects a SUBJ whose index value is identical to that of the input verb's PP complement (in other words, the object of the preposition). The output passive verb also has two complements: a preposition and an optional PP complement coindexed with the agent argument of the input (see below for the function of the feature LIGHT). The correct preposition is identified in accordance with the FORM value of the input PP.

If nothing is further said, the output lexical entry would then generate a flat structure like the following in accordance with the Head-Complement Rule that allows the combination of a head with all of its complements at once:

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(41)

VP[*pass*]

     V[pass]   P   PP

     talked   about   by the people
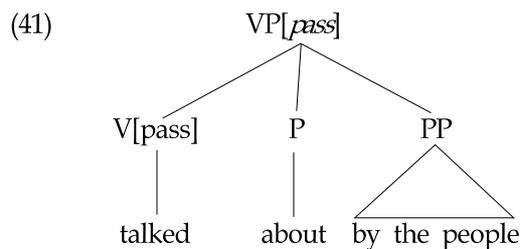
Unlike such a flat or ternary structure, there can be another possible binary structure combining a head with one complement at a time:

(42)

VP[*pass*]

     V[*pass*]   PP

     V[*pass*]   P   by the people

     talked   about
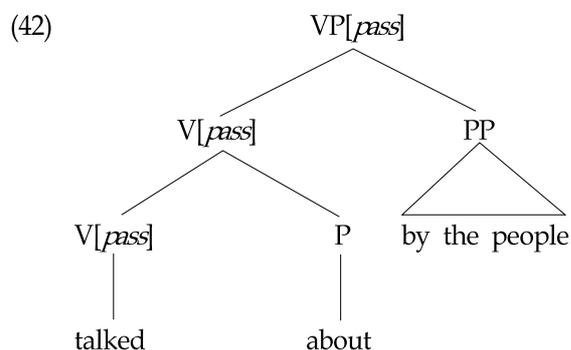
This structure is different from (41) in the sense that the passive verb and the preposition are together 'reanalyzed' as a verb again (in this sense this is often called 'reanalysis'). Both (41) and (42) can capture the coherence between the prepositional verb and the preposition itself. Even though both have their own merits, we choose the structure (42), in which the passive verb and the preposition form a unit. We can observe that there exist environments where the passive verb (but not active verb) forms a coherent lexical unit with the following preposition (cf. Goh 2003):

(43) a. Pavarotti <u>relied</u> on Loren and Bond __ on Hepburn.
    b. *Pavarotti <u>relied on</u> Loren and Bond __ Hepburn.
    c. Loren was <u>relied on</u> by Pavarotti and Hepburn __ by Bond.
    d. *Loren was <u>relied</u> on by Pavarotti and Hepburn __ on by Bond.

What we can observe here is that the gapping can be applied to a lexical

verb *rely* as in (43a), but not to the active prepositional verb with the selected preposition together as shown in (43b). On the contrary, the passive prepositional verb can be gapped only together with the preposition as in (43c). This contrast supports the reanalysis structure at least in the passive which makes the passive verb and the preposition as a constituent. In order for the present grammar to allow the passive V to be combined with the following P (which is defined to be 'LIGHT'), we introduce the following grammar rule:[8]

(44) Head-Light Rule

$$V \rightarrow V, \quad X[\text{LIGHT} +]$$

The rule allows a head V to combine with a LIGHT element such as a preposition in the pseudo-passive verb construction.[9] Let's see how the Pseudo-Passive Rule and this Head-Light Rule combined can account for a pseudo-passive with one example:

(45) a. The people talked about the scandals.
　　 b. The scandals were talked about by the people.

The active prepositional verb *talk* can undergo the Pseudo-Passive Lexical Rule as represented in the following:

(46)

$$
\begin{bmatrix} \langle \text{talk} \rangle \\ \text{SUBJ } \langle \text{NP}_i \rangle \\ \text{COMPS } \langle \text{PP}_j[about] \rangle \end{bmatrix}
\Rightarrow
\begin{bmatrix} \langle \text{talked} \rangle \\ \text{VFORM } pass \\ \text{SUBJ } \langle \text{NP}_j \rangle \\ \text{COMPS } \left\langle \text{P}\begin{bmatrix} \text{LIGHT} + \\ \text{FORM } about \end{bmatrix}, \left(\text{PP}_i[by] \right) \right\rangle \end{bmatrix}
$$

The output passive verb selects one subject whose index value is identical to that of the input's PP complement. It also selects two

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8) See Abeillé and Godard (2000) for the motivation of introducing the feature LIGHT for French.

9) Particles can also be taken to carry the positive LIGHT value, licensing a binary structure for phrasal verbs like *call off the game*.

complements: a preposition whose VFORM is identical with that of the input PP and an optional PP[*by*] linked to the input subject. This output will then license a structure like the following:

(47)

$$
\begin{array}{c}
\text{VP} \\
\end{array}
$$

V — were

VP[*pass*]

V
$$
\begin{bmatrix}
\text{VFORM } pass \\
\text{COMPS } \langle\, \boxed{3}\text{PP} \,\rangle
\end{bmatrix}
$$

$\boxed{3}$PP

by the people

V
$$
\begin{bmatrix}
\text{VFORM } pass \\
\text{COMPS } \langle\, \boxed{2}\text{P, } \boxed{3}\text{PP} \,\rangle
\end{bmatrix}
$$

$\boxed{2}$P
$$
\begin{bmatrix}
\text{LIGHT } + \\
about
\end{bmatrix}
$$

talked
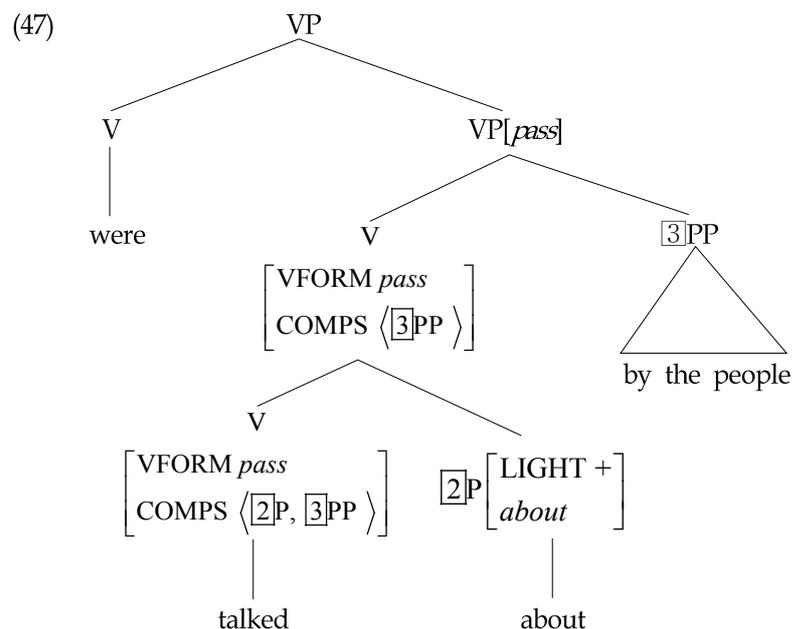
about

The Head-Light Rule in (44) allows the passive verb to combine with the preposition *about* first, forming a lexical element. This resulting lexical element then combines with its PP complement *by the people* in accordance with the Head-Complement Rule.[10]

   Also notice that the prepositions in the passive can be stranded, indicating its status as a lexical element (Baltin and Postal 1996):

(48) a. Communism was talked, argued, and fought about.
     b. The bridge was flown over and then under.
     c. Fascism was fought for by Goebbels and then against by De
        Gaulle.

Now observe the structure that the present analysis generates for the

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10) This means that in the Head-Complement Rule the complement that the head combines with is a phrasal element.

sentence (48a):

(49)

```
                              VP
                  ┌───────────┴────────────┐
                  V                      VP[pass]
                  │                 ┌───────┴──────┐
                 was               V              P
                           ┌───────┼──────┐        │
                           V       V      V       about
                    ┌──────────┐   │     ╱╲
                    │VFORM pass│   │    ╱  ╲
                    │COMPS ⟨2P[about]⟩│ ╱    ╲
                    └──────────┘   │  ╱_____╲
                         │         │
                       talked   argued  and fought
```
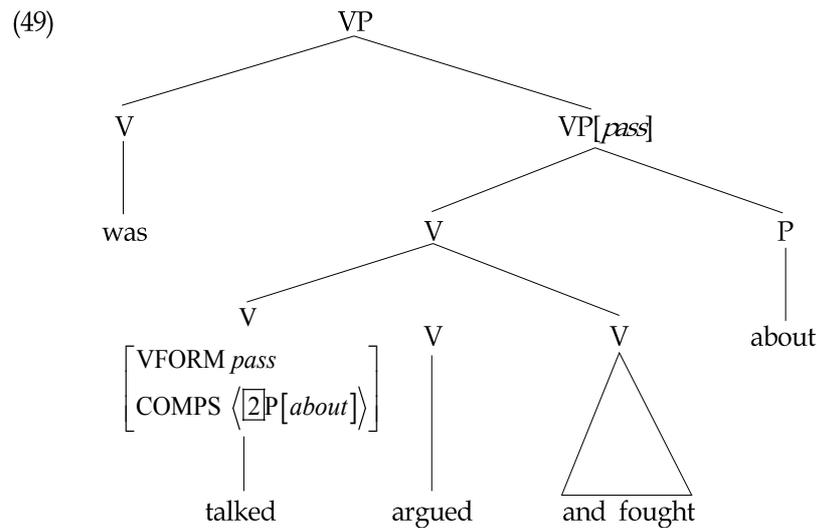
The three verbs here are coordinated, in accordance with the
Coordination Rule, and the resulting expression combines with the P
complement. The present analysis thus licenses each combination.

4.3 Particle Prepositional Verb Construction

Now consider the passivized particle-prepositional verbs:

(50) a. The pain was <u>put up with</u>.
    b. Their expectations will be <u>kept up with</u>.

These verbs select a specific particle and a specified preposition as
seen from its lexical entry:

(51)
$$
\begin{bmatrix}
\text{HEAD } verb \\
\text{SUBJ } \langle \text{NP} \rangle \\
\text{COMPS } \langle \text{Part}[\text{FORM } up], \text{ PP}[\text{FORM } with] \rangle \\
\text{SEM } endure\_rel
\end{bmatrix}
$$

As we can see the only difference from intransitive P-verbs is that such verbs additionally select a particle. This means we just need a minimal modification to the existing lexical rule:

(52) Pseudo-Passive Lexical Rule (To be revised):

$$
\begin{bmatrix}
prep\text{-}v \\
\text{SUBJ } \langle NP_i \rangle \\
\text{COMPS } \langle (\text{Part}), PP_j [\text{FORM } \boxed{4}] \rangle
\end{bmatrix}
\Rightarrow
\begin{bmatrix}
pass-prep-v \\
\text{VFORM } pass \\
\text{SUBJ } \langle NP_j \rangle \\
\text{COMPS } \langle (\text{Part}), P \begin{bmatrix} \text{LIGHT } + \\ \text{FORM } \boxed{4} \end{bmatrix}, (PP_i[\text{FORM } by]) \rangle
\end{bmatrix}
$$

The lexical rule means that prepositional verbs selecting a specified PP or a particle optionally can have counterpart passive words that select this particle as well as the specified preposition as its syntactic complement. The only difference from (40) is thus the addition of the optional particle. The rather idiomatic word *put* in (51a) will have the following passive counterpart:

(53)

$$
\begin{bmatrix}
prep\text{-}v \\
\langle \text{put} \rangle \\
\text{SUBJ } \langle NP_i \rangle \\
\text{COMPS } \langle (\text{Part}), PP_j [\text{FORM } \boxed{4}] \rangle
\end{bmatrix}
\Rightarrow
\begin{bmatrix}
pass-prep-v \langle \text{put} \rangle \\
\text{VFORM } pass \\
\text{SUBJ } \langle NP_j \rangle \\
\text{COMPS } \langle (\text{Part}), P \begin{bmatrix} \text{LIGHT } + \\ \text{FORM } \boxed{4} \end{bmatrix}, (PP_i[\text{FORM } by]) \rangle
\end{bmatrix}
$$

As seen from the output, the passive *put* here now selects a particle as well as the specified preposition as its complements. This will allow us to generate a structure like the following for (50a):

(54)

$$
\begin{array}{c}
\text{S} \\
[\text{VFORM}\,\textit{fin}]
\end{array}
$$

```
(54)                          S
                         [VFORM fin]
                        /            \
                  ⟨2⟩NP              VP
                   /\          ⎡ VFORM fin   ⎤
                  /  \         ⎢ SUBJ ⟨⟨2⟩⟩  ⎥
                 /____\        ⎣ COMPS ⟨ ⟩   ⎦
               The pain       /            \
                             V            ⟨5⟩VP
                     ⎡ VFORM fin ⎤    ⎡ VFORM pass ⎤
                     ⎢ SUBJ ⟨⟨2⟩⟩ ⎥   ⎢ SUBJ ⟨⟨2⟩⟩  ⎥
                     ⎣ COMPS ⟨⟨5⟩⟩⎦   ⎣ COMPS ⟨ ⟩   ⎦
                          |            /    |     \
                         was          V   ⟨3⟩Part  ⟨4⟩P
                              ⎡ VFORM pass   ⎤  |      /\
                              ⎢ SUBJ ⟨⟨2⟩⟩    ⎥  |     /  \
                              ⎣ COMPS ⟨⟨3⟩,⟨4⟩⟩⎦ |    /____\
                                   |           up   with
                                  put
```
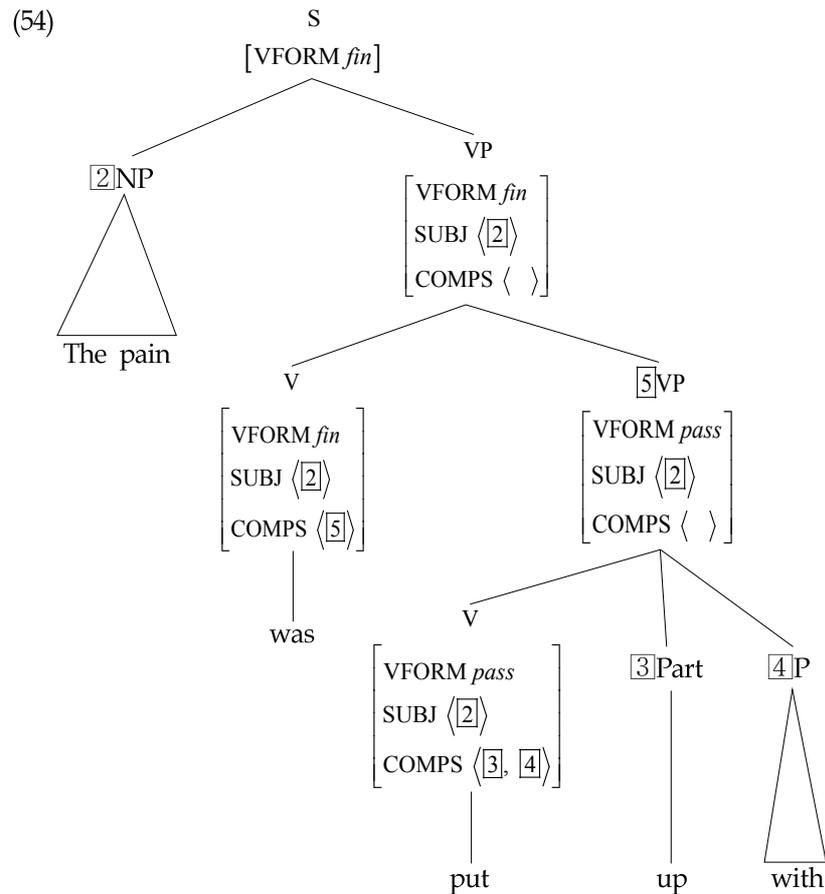
4.4 Transitive Prepositional Verb Construction

As we have seen, transitive P-verbs can allow four different types of passive. Of these, let us consider the one that either the object or the prepositional object can be promoted as the subject:

(55) a. The matter was paid a lot of attention to.

b. A lot of attention was paid to the matter.

As we have noted earlier, not all transitive verbs can participate in the pseudo-passive. As noted in Bresnan et al. (1982) and Sag et al. (2002), such a transitive verb places the FORM value restriction on its object complement as represented in the following lexical entry:

(56)
$$\begin{bmatrix} prep\text{-}v \\ \langle \text{pay} \rangle \\ \text{SUBJ } \langle NP_i \rangle \\ \text{COMPS } \langle ([\text{FORM } attention]), PP_j[\text{FORM } to] \rangle \end{bmatrix}$$

This means that the verb *pay* can only have an idiomatic meaning when its object contains the word *attention*. The phrasal verb selecting a particle verb can also place a specific FORM restriction on its particle verb. Given this common factor, we then can modify the rule in (52) as following:[11]

(57) Pseudo-Passive Lexical Rule (Final):

$$\begin{bmatrix} prep\text{-}v \\ \text{SUBJ } \langle NP_i \rangle \\ \text{COMPS } \langle ([\text{FORM } \boxed{5}]), PP_j[\text{FORM } \boxed{4}] \rangle \end{bmatrix}$$

$$\Rightarrow \begin{bmatrix} pass-prep-v \\ \text{VFORM } pass \\ \text{SUBJ } \langle NP_j \rangle \\ \text{COMPS } \langle ([\text{FORM } \boxed{5}]), P\begin{bmatrix} \text{LIGHT } + \\ \text{FORM } \boxed{4} \end{bmatrix}, (PP_i[\text{FORM } by]) \rangle \end{bmatrix}$$

This revised lexical rule now encompasses all the three types of pseudo-passives. This final rule specifies that when an input verb selects

11) See Sag et al. 2002, Goh 2003, Tseng 2006, 2007, Kim and Sells 2008 for a similar lexical rule.

one optional complement and another oblique PP and both must have a FORM value specified, we can have an output passive verb that selects the object of the oblique PP as its subject and takes its subject as the optional PP complement. This means that the passive verb *pay* will undergo such a lexical process:

(58)
$$
\begin{bmatrix} prep\text{-}v \\ \langle \text{pay} \rangle \\ \text{SUBJ } \langle \text{NP}_i \rangle \\ \text{COMPS } \left\langle ([\text{FORM } attention]), \text{PP}_j[\text{FORM } to] \right\rangle \end{bmatrix}
$$

$$
\Rightarrow \begin{bmatrix} pass - prep - v \\ \langle \text{paid} \rangle \\ \text{VFORM } pass \\ \text{SUBJ } \langle \text{NP}_j \rangle \\ \text{COMPS } \left\langle \text{NP}[\text{FORM } attention], \text{P} \begin{bmatrix} \text{LIGHT } + \\ \text{FORM } to \end{bmatrix}, \left(\text{PP}_i[\text{FORM } by] \right) \right\rangle \end{bmatrix}
$$

The passive verb *paid* now selects the NP with the nonempty FORM value and the preposition *to* as its complements. This will then license the following structure:

(59)

$$
\begin{array}{c}
\text{S} \\
[\text{VFORM } \textit{fin}]
\end{array}
$$

The tree structure:

- S [VFORM *fin*]
  - 2 NP — The teacher
  - VP
    $$\begin{bmatrix} \text{VFORM } \textit{fin} \\ \text{SUBJ } \langle \boxed{2} \rangle \\ \text{COMPS } \langle \ \rangle \end{bmatrix}$$
    - V
      $$\begin{bmatrix} \text{VFORM } \textit{fin} \\ \text{SUBJ } \langle \boxed{2} \rangle \\ \text{COMPS } \langle \boxed{5} \rangle \end{bmatrix}$$ — was
    - 5 VP
      $$\begin{bmatrix} \text{VFORM } \textit{pass} \\ \text{SUBJ } \langle \boxed{2} \rangle \\ \text{COMPS } \langle \ \rangle \end{bmatrix}$$
      - V
        $$\begin{bmatrix} \text{VFORM } \textit{pass} \\ \text{SUBJ } \langle \boxed{2} \rangle \\ \text{COMPS } \langle \boxed{3}, \boxed{4} \rangle \end{bmatrix}$$ — paid
      - 3 NP — a lot of attention
      - 4 P — to
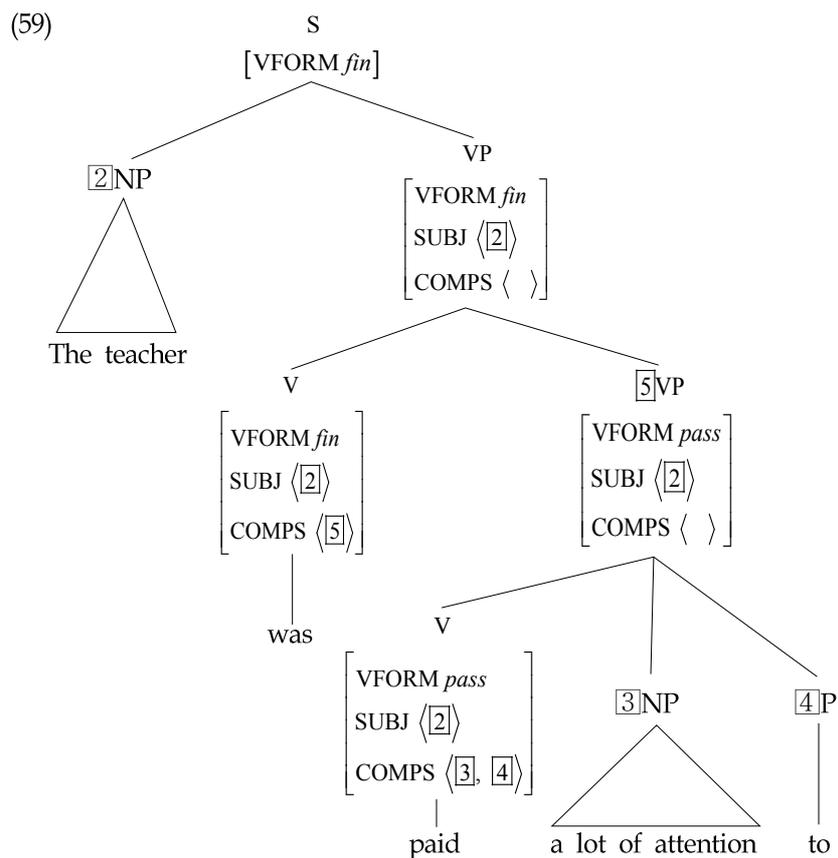
As represented in the tree structure, the object of the preposition *to* can thus be promoted as the subject in a systematic way. Notice that the object can also be passivized in accordance with the regular Passive Lexical Rule given in (36), generating a sentence like *A lot of attention was paid to the teacher*.

4.5 Incorporating the Semantic/Pragmatic Conditions

In the previous section, we have seen that the pseudo-passive has semantic/pragmatic constraints repeated here:

(60) Pragmatic Constraints in the Pseudo-Passive:

In the prepositional verb construction, the prepositional object of an adjunct PP can be passivized when the VP characterizes the subject referent or describes an affected condition of its property.

One formal way to incorporate this in the present system is to adopt the MRS (Minimal Recursion Semantics), developed by Copestake et al. (2005). MRS is a framework of computational semantics designed to enable semantic composition using only the unification of type feature structures.[12] Adopting the MRS mechanism, we can sketch a way of formalizing this in the grammar:

(61)
$$\begin{bmatrix} \text{SYN}|\text{SUBJ} \langle \text{NP}i \rangle \\ \text{SEM} \begin{bmatrix} \text{INDEX } i \\ \text{RELS} \left\langle ..., \begin{bmatrix} \text{PRED } characterize\_rel \\ \text{ARG0 } e1 \\ \text{ARG1 } i \\ \text{ARG2 } j \end{bmatrix}, \begin{bmatrix} \text{PRED } affected\_rel \\ \text{ARG0 } e2 \\ \text{ARG1 } j \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$
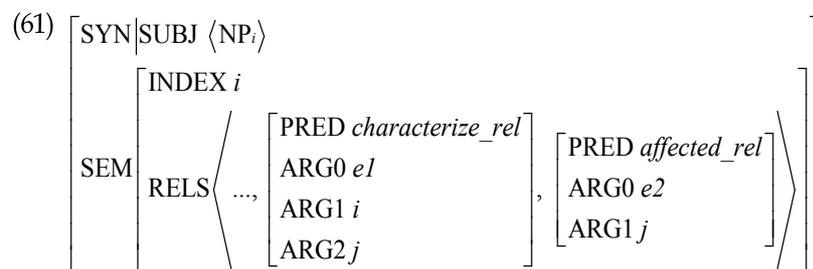
This representation means that the event (marked with the index i) denoted by the passive prepositional verb *characterizes* the subject referent's property; the subject's reference can be in an *affected* relation too. Even though there exist more formal issues, this at least shows us how we can formalize the pragmatic constraints in the system of the grammar sketched here.

   This pragmatic constraint can also provide us with a way of dealing with cases in which the prepositional object of a modifier PP is passivized, whose data we repeat here:

(62) a. This bed was slept in. (He slept in this bed.)
    b. My hat has been sat on. (He has sat on my hat.)

The only thing the present system needs to assume is that the PP in

---

12) The value of the attribute MRS's SEM(ANTICS) is simplified here. ARG0 canonically refers to the index value of the EP (elementary predicate) itself whereas ARG1 or ARG2 refers to the predicate's semantic arguments. See Copestake et al. (2005) and Kim (2006) for details.

such a case can be realized as the COMPS element. As noted by Kim and Sag (2002) and others, there are cases where adverbial elements can be realized as complements. If we allow the adverbial PP when it meets the condition given in (61), we then can naturally apply the Pseudo-Passive Lexical Rule in such cases.

5. Conclusion

We have seen that English has at least three major types of pseudo-passives. In these three types (intransitive, particle, and transitive), the prepositional object is promoted as the subject.

There exist various constraints controlling the passivization of these prepositional verbs: idiosyncratic lexical constraints, agentive and affected constraints, and characterization property. After observing these, we have developed a lexicalist analysis that can generate these three types of pseudo-passive and further have sketched a way of representing the pragmatic constraints in the grammar system too.

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