

# Double Objects Again\*

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## 1 The double object and NP+PP frames

In (1a) is a sentence that illustrates what we'll call the double object frame; and in (1b) is illustrated what we'll call the NP+PP frame.

- (1) a. Satoshi sent Thilo the Schwäbische Wörterbuch.
- b. Satoshi sent the Schwäbische Wörterbuch to Thilo.

Many have entertained the notion that there is a rule that relates sentences such as these. This is suggested by the fact that it is possible to learn that a newly coined verb licenses one of them and automatically know that it licenses the other. Marantz (1984) argues for the existence of such a rule in this way, noting that once one has learned of the new verb *shin* by exposure to (2a), the grammaticality of (2b) is also learned.

- (2) a. Thilo shinned the ball to Satoshi.
- b. Thilo shinned Satoshi the ball.

This is explained if there is a rule that ties the double object frame together with the NP+PP frame, making it sufficient to know that a verb licenses one if it licenses the other.

Frequently, the rule involved has been taken to be syntactic in nature. See, among many others, Fillmore (1965), Oehrle (1976), Baker (1988), and Larson (1988). The leading idea under this view is that the two frames are simply different surface manifestations of the same underlying structure. Typically, this approach posits that the NP+PP frame represents that underlying structure from which the double object frame is transformationally derived.

There is evidence, however, that the two frames instead have different underlying structures, and are not related by transformation. This evidence, then,

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\*Our thanks to Thilo Goetz and Satoshi Tomioka for the examples.

suggests that the rule relating (1a) and (1b) must be found somewhere else, a likely candidate being the lexicon. We report here an argument from Kayne (1984b) to this end that is based on Nominalizations.

With certain restrictions, deverbal nominalizations allow the object of the verb to surface as either the genitive of the resulting NP, or inside an *of*-phrase.

- (3) examine the problem →  
 (4) a. the examination of the problem  
       b. the problem's examination

But this is only possible if the “object” of the verb is its logical object, i.e., its argument.<sup>1</sup> It is not possible if it is instead the subject of a small clause, for example:

- (5) believe Thilo handsome →  
 (6) a. \* the belief of Thilo handsome  
       b. \* Thilo's belief handsome

In this way, then, Nominalizations can be used to determine whether the NPs that follow a verb are that verb's argument or not. On this basis, Kayne argued that the first NP following a verb in the double object frame is not that verb's argument because in Nominalizations it behaves like *believe* and not like *examine*:

- (7) present Satoshi a ball →  
 (8) a. \* the presentation of Satoshi a ball  
       b. \* Satoshi's presentation a ball

In the NP+PP frame, by contrast, the first NP does behave like the verb's argument:

- (9) present the ball to Satoshi →  
 (10) a. the presentation of the ball to Satoshi  
       b. the ball's presentation to Satoshi

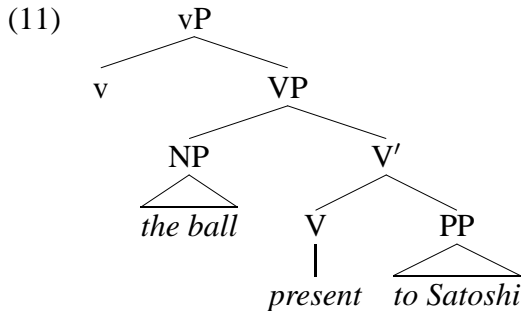
He proposes that the two NPs following a verb in the double object frame are embedded in a small clause in much the same way that the two phrases following *believe* in (5) are. Just as *Thilo* in (5) is the subject of a small clause, then, Kayne's proposal is that *Satoshi* is the subject of a small clause in (7).

If we adopt a Larsonian,<sup>2</sup> binary-branching, representation of VPs, we can express the different structures that Kayne's proposal would give to the double object and NP+PP frames as follows. The NP+PP frame would place the two complements in the Specifier and Complement positions of a phrase headed by the verb,

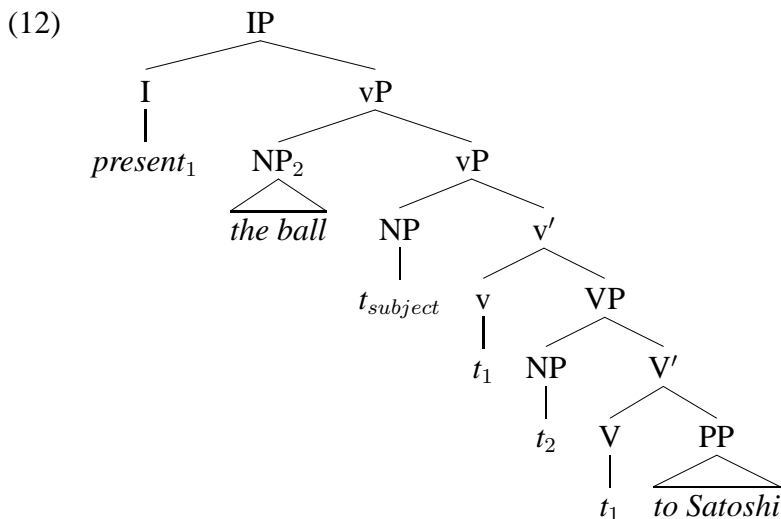
<sup>1</sup>The paradigm supporting this generalization originates with Ross (1974).

<sup>2</sup>See Larson (1988) and Larson (1990).

and this VP will be embedded in another phrase (“vP”) whose head has no phonological reflex.<sup>3</sup> There is controversy about which argument goes into which position inside VP — let’s take the position that the NP occupies the Specifier position, as in (11).<sup>4</sup>



From this underlying representation, the surface form is produced by moving the verb through the position occupied by “v” and into a higher  $I^0$  position. In addition, the “object” NP is moved into a position that determines its Case — a position located between the surface position of the verb and vP. There are presently many differing proposals about how to operationalize this system; any of them will do for our purposes. For concreteness, we will let the object NP adjoin to vP, as in Chomsky (1995), and simply call the position in which the verb surfaces:  $I^0$ . From (11), then, the surface representation of the NP+PP frame will be (12).

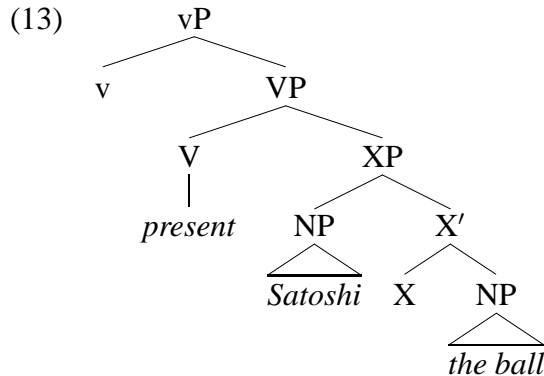


<sup>3</sup>For the existence and nature of vP, see Hale and Keyser (1993, 1997) Kratzer (1994) and much subsequent work.

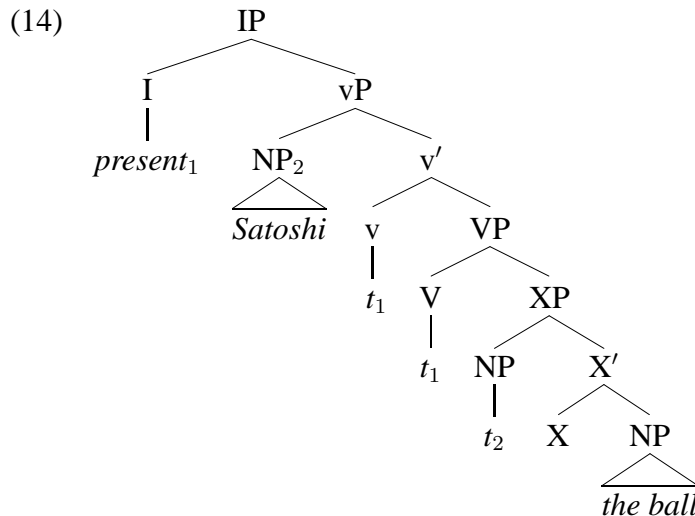
<sup>4</sup>This is how Larson (1988) would do it; for arguments to the contrary, see Takano (1996). Either view is consonant with our conclusions.

This is a standard way of representing two-object verbs, and the NP+PP frame is simply one of these.

By contrast, under Kayne's proposal the double object frame has a small clause hidden in it, which gives it an underlying representation like (13).



“X” is the silent head of the small clause. From the underlying (13), the surface representation is produced from the same verb movement + object movement that operates to form (12):



A complete theory would link the many other unique properties of the double object frame to the existence of this small clause.<sup>5</sup> But that's not what we will do here.

<sup>5</sup>The most famous of which are: the scope rigidity of the two objects (see Barss and Lasnik (1986), Richards (1997) and Bruening (2001)); its behavior in particle constructions (see Kayne (1984a), Dikken (1992) and Johnson (1991)); the inability of the first object to Heavy NP Shift (see Pesetsky (1982) and Larson (1988)); and the patterns of Case marking allowed (see Zaenen, Maling, and Thráinsson (1985), Collins and Thráinsson (1993)).

In addition to syntactic contrasts such as these, there are semantic reasons for believing that the double object frame and the NP+PP frame are not mere surface variants of the same sentence. There are sometimes truth conditional differences between a double object frame sentence and the corresponding NP+PP frame sentence. Green (1974) argued that these differences form a pattern, moreover, which we suggest gives a clue as to the identity of “X” heading the small clause in the double object frame.

Green observes several differences between these frames.<sup>6</sup> She argues that the double object frame always has a component to its meaning that is not necessarily found in the NP+PP frame. She argues that every double object frame includes a possession, or HAVE, component to its meaning.<sup>7</sup> Very roughly, the meanings of (1a) and (2a) might be expressed with (15).

- (15) a. Satoshi’s sending [the Wörterbuch] CAUSE [BECOME [Thilo HAVE the Wörterbuch]]  
 b. Thilo’s shinning [the ball] CAUSE [BECOME[Satoshi HAVE the ball]]

By contrast, the NP+PP frame does not necessarily have the HAVE component in its meaning. The meanings of (1b) and (2b), for instance, might be expressed with (16).<sup>8</sup>

- (16) a. Satoshi’s sending [the Wörterbuch] CAUSE [BECOME [the Wörterbuch is AT Thilo]]  
 b. Thilo’s shinning [the ball] CAUSE [BECOME [the ball is AT Satoshi]]

Green’s conclusion is built on the claim that the meaning of every double object frame has properties that derive from the presence of HAVE, and that these

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<sup>6</sup>It is not our purpose here to examine all of these differences. Among those we will ignore is the issue of telicity, which is what we believe is behind the oft-noted difference in *teach someone something*, which entails that someone learnt something, and *teach something to someone*, which doesn’t. (See Oehrle (1976)).

<sup>7</sup>We must worry about such cases as *deny* and *spare*. A sentence like (1) can be shoved into this pattern only by allowing NOT-HAVE, as in (2), to be part of the generalization.

- (1) Thilo denied Satoshi the victory.  
 (2) Thilo’s denying CAUSE [BECOME [Satoshi NOT-HAVE the victory]]

Or, preferably, we can fold these cases into one of the other classes of verbs that license two NPs in their VP but which are plausibly not members of the double object frame (e.g., “Satoshi elected Thilo class president,” or “The book cost Thilo 60 euro.”)

<sup>8</sup>We express here the locative meaning *to* has in this context with (is) AT.

properties are not always present in the meanings of the NP+PP frame. The contrast in (17) is one such difference.

- (17) a. Satoshi sent the Schwäbische Wörterbuch to Tübingen.  
 b. # Satoshi sent Tübingen the Schwäbische Wörterbuch.

Because the indirect object (i.e., the PP) in the NP+PP frame denotes a location, it is free to refer to inanimate places as well as to animate ones. But because the double object frame makes the indirect object (i.e., first NP) the subject of a HAVE relation, it is confined to referring to objects that can be possessors. The oddness of (17b) derives from imputing Tübingen with this ability. All motion verbs with the double object and NP+PP frames show this kind of contrast.<sup>9</sup>

Another contrast pointing in the same direction can be seen in (18).

- (18) a. Thilo cooked spätzle<sup>10</sup> for Satoshi.  
 b. Thilo cooked Satoshi spätzle.

The indirect object in (18a) has a significantly wider range of roles than does the indirect object in (18b). It's possible to understand (18a) to describe a situation in which Thilo cooked spätzle in place of Satoshi — perhaps Satoshi doesn't know the recipe,<sup>11</sup> for example, but is supposed to bring some to the potluck. But that meaning is absent in (18b), which can only mean that Thilo cooked spätzle for Satoshi to have. This follows if the meaning of *cook* in the double object frame is as in (19a), whereas it is something like (19b) when in the NP+PP frame.

- (19) a. Thilo's cooking spätzle CAUSE [BECOME [Satoshi HAVE spätzle]]  
 b. Thilo's cooking spätzle CAUSE [BECOME [EXIST(spätzle)]] for the benefit of Satoshi

Note that in (19b), *for Satoshi* is a kind of modifier, and therefore has a considerably different status than does the argument *Satoshi* in (19a). This difference in the double object and the NP+PP frame is reproduced in every benefactive verb that has both these frames.<sup>12</sup>

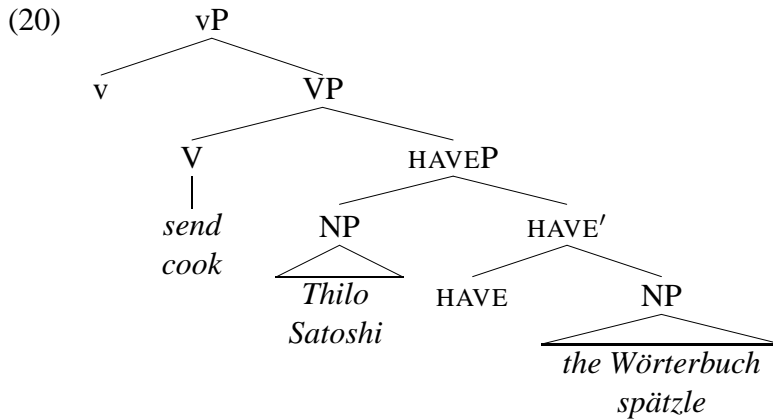
These two sources of evidence can be tied together if "X" is the source of the constant HAVE part to the meanings we have seen in the double object frame. Thus, the double object frame for *send* and *cook* would be as in (20).

<sup>9</sup>Motion verbs of this sort include *kick, throw, mail, ship, hurl, push, roll, toss, kick, drag, . . .*

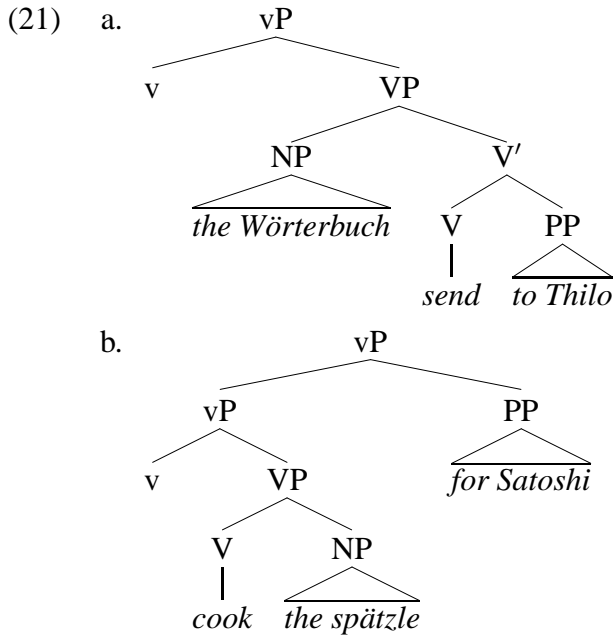
<sup>10</sup>The pasta indigenous to southern Germany.

<sup>11</sup>Beat 250 grams of flour, 2 eggs, 4 ounces of water and some salt to a smooth dough. Spread a portion onto a wet board and scrape thin slices off into a pot of boiling water with a long knife. Spätzle are done when they rise to the surface. Take out immediately and put on a warm platter. Repeat until all the dough is used. Serves 4.

<sup>12</sup>A list that includes *bake, boil, fry, knit, sew, cut, make, build, fashion, . . .*



By contrast, the underlying representation for the NP+PP frames for these verbs would be as in (21).



In (21b) we have adjoined the modifier *for Satoshi* to vP. (We return to the position of the *for*-phrase in section 3.)<sup>13</sup>

In this paper, we will produce new evidence that largely confirms this picture of the difference between the double object and NP+PP frames. The evidence comes from the behaviour of the adverb *again*. Section 2 sketches an analysis of *again* from von Stechow (1995, 1996), which is applied to the double object and

<sup>13</sup>The literature is rife with alternatives, but almost all of them share with (21) what is crucial for us: that verb and its arguments form a constituent underlyingly that does not include the modifier. (Interestingly, Larson (1988) is one of the rare counterexamples to this.)

NP+PP frames in section 3. While the results confirm that the double object frame has a small clause in it headed by HAVE that is absent from the NP+PP frame, they will drive us to a more complex representation than (20). Furthermore, we will see that the NP+PP frame also sometimes holds a hidden small clause in it. This means that the central difference in these frames devolves to what kind of small clause they can house: only the double object frame has HAVE.

## 2 A structural theory of *again*

In this section, we introduce our proposed test for the internal make-up of the predicates in section 1: the adverb *again*. The theory we discuss is von Stechow (1995, 1996), which shows that the different readings of *again* are a probe into the syntactic and semantic composition of predicates.

### 2.1 A basic case: open

The basic fact to be captured by a theory of *again* is the ambiguity of data like (22), whose two possible readings are paraphrased in (23).

(22) Sally opened the door again.

- (23) a. Sally opened the door, and she had done that before.  
(repetitive)
- b. Sally opened the door, and the door had been open before.  
(restitutive)

On both interpretations, what makes the sentence in (22) appropriate is some previous eventuality. On the repetitive reading, that event has to be a previous opening of the door by Sally. On the restitutive reading, by contrast, that event is the door's being open.

The repetitive reading in (22a) is the straightforward one. For this reading, we assume an interpretation of *again* as given in (24) (compare e.g. Stechow (1996), Fabricius-Hansen (2001) for recent discussion and references). *Again* operates on a property of events, and indicates repetition of events characterized by that property. More precisely, *again* expresses a relation between a property of events and an event. It presupposes that there was a previous event that has the property, and asserts that the property is true of the event.<sup>14</sup>

<sup>14</sup>Like Stechow, we assume a standard framework of compositional translation into a formal language. The logic we use makes use of event variables (cf. Davidson (1967)). The semantic type of events is  $\langle i \rangle$ .



(24)

$$\llbracket \text{again} \rrbracket (\mathbf{P}_{\langle i,t \rangle})(e) = \begin{cases} 1 & \text{iff } P(e) \ \& \ \exists e' [ e' < e \ \& \ P(e') ] \\ 0 & \text{iff } \neg P(e) \ \& \ \exists e' [ e' < e \ \& \ P(e') ] \\ & \text{undefined otherwise} \end{cases}$$

The input to *again* on the repetitive reading is the predicate of events given (approximately) by (25): openings of the door by Sally. This can be derived from the sentence in (22) straightforwardly, as we will see in detail below.

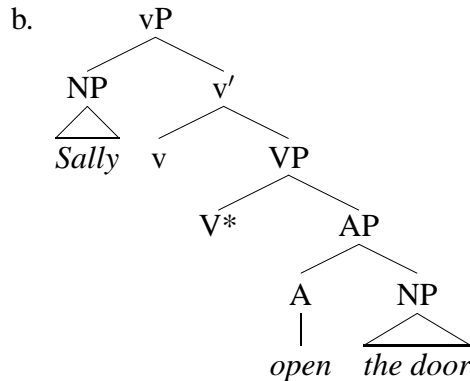
(25)  $\lambda e.$ Sally\_opened\_the\_door( $e$ )

More challenging is the restitutive reading. Under a structural theory of *again*, it is assumed that *again* always has the meaning in (24), i.e. indicates repetition. The difference between the two readings is in what event is repeated. On the restitutive reading, only the result state of the opening of the door is repeated; thus *again* operates on the predicate of events in (26).

(26)  $\lambda e.$ open <sub>$e$</sub> (the\_door)

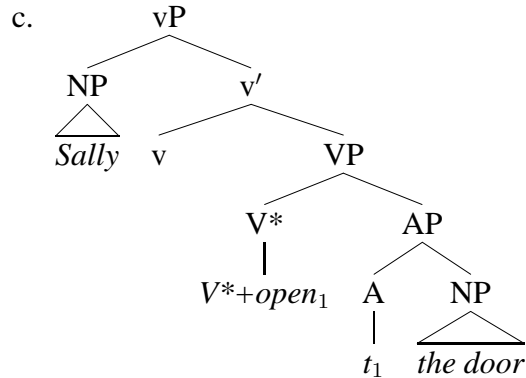
The problem is to derive the property of events in (26) from the syntactic structure of (22). Stechow (following earlier suggestions e.g. by McCawley (1968)) proposes a decomposition analysis of the verb *open*, which is reflected in the syntactic structure. Thus, the sentence in (27a) has the underlying structure in (27b), where *open* is decomposed into the adjective *open*, and a phonologically empty verb (=V\*) which contributes a CAUSE BECOME component to the meaning of the sentence (cf. (28)). The surface structure is given in (27c).<sup>15</sup> The sentence is interpreted compositionally to derive the predicate of events in (29a), which captures the intuitive truth conditions of (27a); (29b) is a paraphrase.<sup>16</sup>

(27) a. Sally opened the door.



<sup>15</sup>In this respect, his proposal mirrors Hale and Keyser (1993, 1997).

<sup>16</sup>We assume standard interpretations of the expressions CAUSE and BECOME in these formulas — compare Lewis (1973), Dowty (1979) and von Stechow (1996).

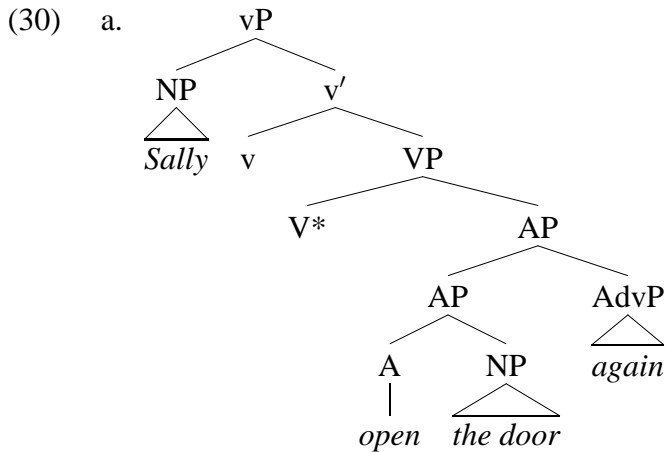


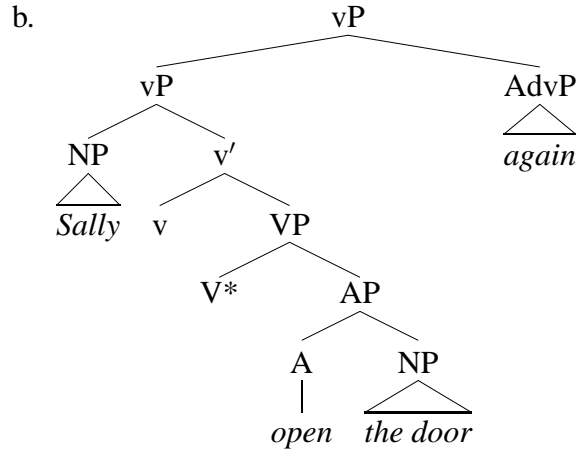
(28)  $[[V^*]] = \lambda p \lambda x \lambda e \exists p[P_e(x) \ \& \ \exists e'[\text{BECOME}_{e'}(p) \ \& \ \text{CAUSE}(e')(e) ]]$

(29) a.  $\lambda e \exists p[P_e(\text{Sally}) \ \& \ \exists e'[\text{BECOME}_{e'}(\lambda e''.\text{open}_{e''}(\text{the\_door})) \ \& \ \text{CAUSE}(e')(e) ]]$

b. There was an action of Sally's that caused the door to become open.

The assumption that we have the structure in (27) for the verb *open* gives us a straightforward way of deriving the ambiguity. *Again* has two different adjunction sites, and consequently two different constituents it can modify. The two structures for the ambiguous example (22) are given in (30). (30a) can straightforwardly be interpreted as in (31) — the desired restitutive reading. (30b) is interpreted as in (32), a more complete derivation of the repetitive reading.





- (31) a.  $\lambda e \exists P[P_e(S) \ \& \ \exists e'[\text{BECOME}_{e'}(\lambda e''.\text{again}_{e''}(\lambda e'''.\text{open}_{e'''}(\text{the\_door})))] \ \& \ \text{CAUSE}(e')(e)]]$   
 b. There was an action of Sally's that caused the door to become once more open.
- (32) a.  $\lambda e.\text{again}_e(\lambda e' \exists P[P_{e'}(S) \ \& \ \exists e''[\text{BECOME}_{e''}(\lambda e'''.\text{open}_{e'''}(\text{the\_door}))] \ \& \ \text{CAUSE}(e'')(e')]])]$   
 b. Once more, there was an action of Sally's that caused the door to become open.

The ambiguity is thus purely structural in nature. *Again* operates on properties of events, and always indicates repetition. Therefore, all properties of events that can, intuitively, be modified by *again* must be available as the denotations of syntactic constituents that *again* attaches to.

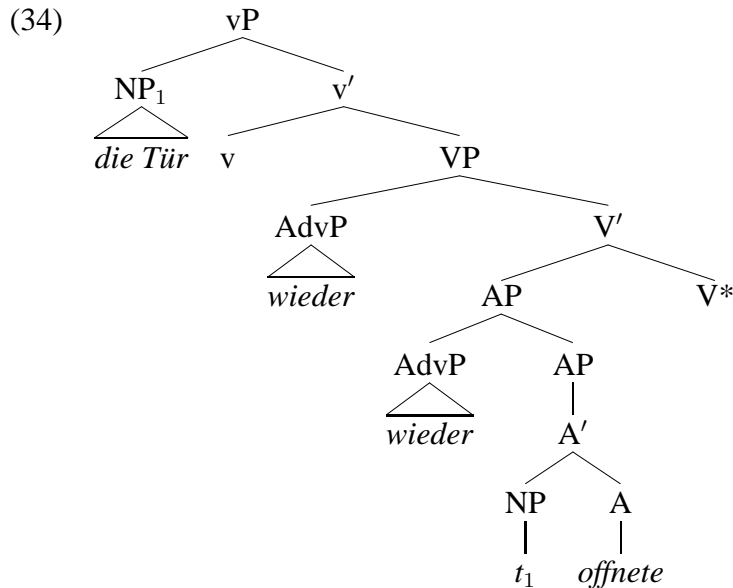
## 2.2 *again* is a test of syntactic structure

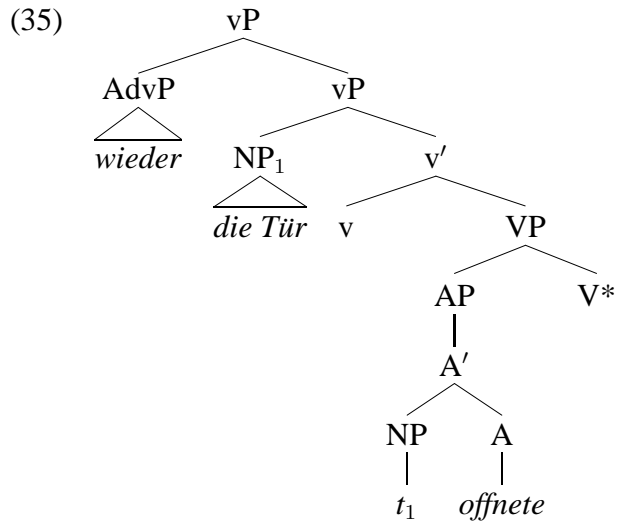
It might be thought to be rather costly to introduce the whole decomposition structure in (27) into the syntax for the purposes of deriving the ambiguity in (22). Indeed, other researchers have argued that result states are available on a conceptual level, and that *again* has a reading in which it indicates repetition of those result states rather than of the property of events that it modifies (see e.g. Fabricius-Hansen (2001)) for a recent proposal in this spirit, and references therein.). Under such an analysis, *again* would no longer be a detector of constituents that denote result states, since the result states need not be the meaning of any constituent in the syntactic structure. The ambiguity in (22) would be lexical (two interpretations of *again*) rather than structural.

Stechow's most important argument for the syntactic solution is the fact that the availability of the restitutive reading hinges on syntactic context. Since we will use *again* as an indicator of syntactic structure, we will briefly review this argument. It comes from the German word order facts illustrated by (33). A restitutive reading of *wieder* (=again) is only possible when *wieder* follows the direct object. If *wieder* precedes the object, only the repetitive reading is available.

- (33) a. (weil) Satoshi die Tür wieder öffnete.  
 (because) Satoshi the door again opened  
 (*repetitive and restitutive readings*)
- b. (weil) Satoshi wieder die Tür öffnete.  
 (because) Satoshi again the door opened  
 (*repetitive reading only*)

Stechow's explanation for these facts is, in a nutshell, that the direct object in German obligatorily moves to a fairly high position in the structure (SpecAgrO, for Stechow; vP for us). That position is higher than the element in the structure that expresses the CAUSE BECOME meaning component. Thus when *wieder* precedes, and is higher than, the direct object, it must take scope over CAUSE BECOME. On the other hand, when *wieder* follows the direct object, it may be above or below CAUSE BECOME. The relevant structures are given below. The empty verb is responsible for CAUSE BECOME. In (34), *wieder* can adjoin either below (to the small clause) or above the verb (to the vP), as indicated. In (35), word order tells us that the sister of *wieder* includes the VP and the verb. Thus the example can only be repetitive.





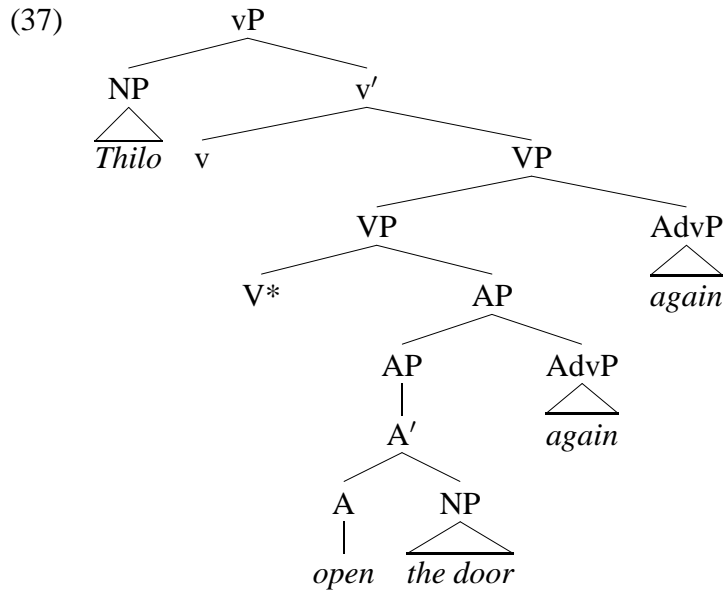
The data show that a proper analysis of restitutive *wieder* has to rely on syntactic structure. Conceptual availability of a result state is not sufficient for the existence of a restitutive reading.

The German facts can be reproduced in English. While (36a) is ambiguous, (36b) with *again* preceding the finite verb, is unambiguously repetitive.

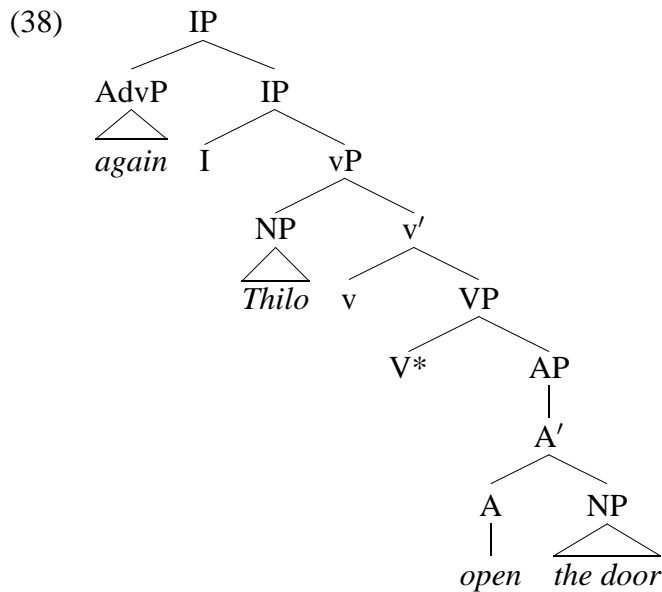
- (36) a. Thilo opened the door again. (*repetitive and restitutive*)  
 b. Thilo again opened the door. (*repetitive only*)

Stechow's structural explanation extends straightforwardly to English. In (36a), as we saw above, two adjunction sites for *again* are possible. *Again* could adjoin to the Small Clause (resulting in a restitutive reading) or to the VP (resulting in a repetitive reading, the adjunction site being above CAUSE BECOME):<sup>17</sup>

<sup>17</sup>For simplicity, in this, and all following representations for which we give an interpretation, the semantically vacuous movements that form the surface representation will be ignored.



On the other hand, it is clear in (36b) that the adjunction site of *again* must include VP:



We conclude that there is support for the structural nature of Stechow's analysis in both German and English.<sup>18</sup> His theory implies that the properties of events that *again* operates on are directly provided as the denotations of constituents in the

<sup>18</sup>English data also furnish support for Stechow's account of certain counterexamples to the generalization just described. There are some verbs whose sentences allow *wieder* to precede the object and still give a restitutive reading. One of these is *verlassen*:

syntax. *Again* adjoins to those constituents. The word order facts support this. Additional evidence that favours a structural theory over its alternatives has been brought forth in Beck and Snyder (2001). In what follows we use this analysis of *again* to gather information about the predicates from section 1.

### 3 Two-object verbs and *again*

This section will apply *again* as a test for constituent structure and for semantic composition to the constructions from section 1. We first look at double object constructions, and then compare them to the corresponding NP+PP frames.

#### 3.1 Double object constructions and *again*

(39) is ambiguous between the repetitive reading in (40a) and the restitutive reading in (40b).

(39) Thilo gave Satoshi the map again.

- (40) a. Thilo gave Satoshi the map, and that had happened before.  
 b. Thilo gave Satoshi the map, and Satoshi had had the map before.

According to the structural theory of *again*, *again* must operate on the two predicates of events given (roughly) in (41) for these readings.

- (41) a.  $\lambda e.$ Thilo\_gave\_Satoshi\_the\_map( $e$ )  
 b.  $\lambda e.$ have <sub>$e$</sub> (the\_map)(Satoshi)

The restitutive reading, in particular, requires there to be a constituent whose meaning is (41b). This leads us to suggest the interpretation in (42) for (39) on that reading.

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- (1) Als Anna wieder das Haus verließ, war es dunkel.  
 When Anna again the house left, was it dark  
 ‘When Ann left the house again, it was dark’

(*repetitive and restitutive readings*)

(Stechow 1996, section 6)

His account of these counterexamples is that the verbs in question allow objects to surface in a lower position, and this allows *wieder* to be adjoined to the constituent that denotes the result state and still precede the object. Interestingly, in the cases where our judgments are clear, these verbs in English do not allow the restitutive reading when *again* precedes the verb:

- (2) Anna again left the house. (*repetitive reading only*)

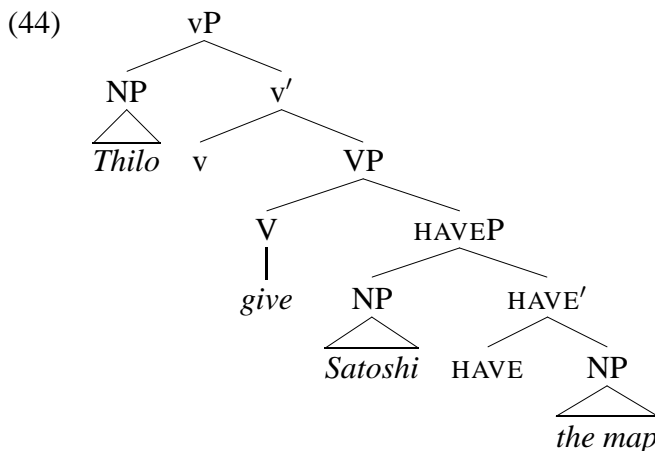
This is expected on Stechow’s account, as his solution involves manipulating the relative positions of the object and adverb and in the English data it is the relative positions of verb and adverb that matter.

- (42) a.  $\lambda e[\text{give}_e(\text{the\_map})(\text{Thilo}) \ \& \ \exists e'[\text{BECOME}_{e'}(\lambda e''.\text{again}_{e''}(\lambda e'''.\text{have}_{e'''}(\text{the\_map})(\text{Satoshi})) \ \& \ \text{CAUSE}(e')(e))]$   
 b. Thilo's giving of the map caused Satoshi to come to once more have the map.

A fully specified interpretation for a double object *give* example without *again* therefore looks as in (43).

- (43) a. Thilo gave Satoshi the map.  
 b.  $\lambda e[\text{give}_e(\text{the\_map})(\text{Thilo}) \ \& \ \exists e'[\text{BECOME}_{e'}(\lambda e''.\text{have}_{e''}(\text{the\_map})(\text{Satoshi})) \ \& \ \text{CAUSE}(e')(e)]$   
 c. Thilo's giving of the map caused Satoshi to come to have the map.

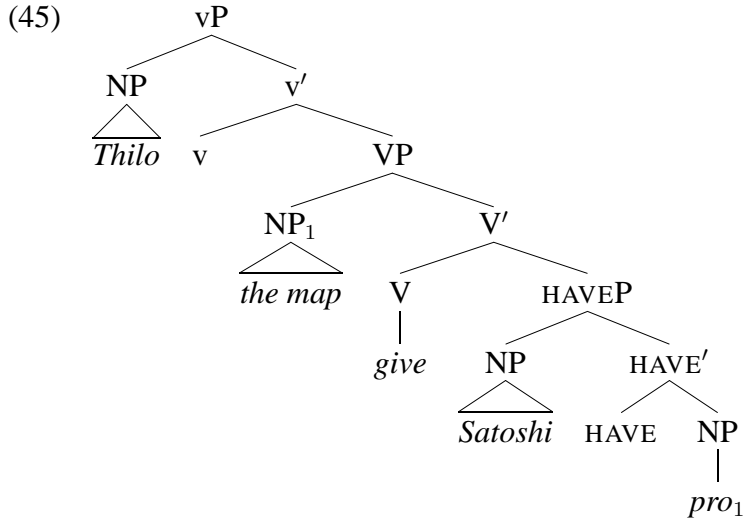
According to section 1, the interpretation in (43b) would have to be derived from the structure in (44).



However, note that *the map* would have to serve as an argument of both HAVE and *give* in (43b). So we have to establish an anaphoric connection between these argument slots. And second, note that a source of the CAUSE BECOME component has to be found.

For the first of these needs, we suggest changing the representation in (44) so that it has a silent argument in it which we will designate with “pro.” This silent argument must be c-commanded by *the map*, and so we will make it the argument of HAVE, and make *the map* the argument of *give*. This means that the underlying structure of the VP of a double object *give* example is now:





From this representation, the surface order is achieved in the way outlined in section 1: by moving the verb into a position outside vP and moving the “direct object” – here *Satoshi* – into the position licensing accusative Case marking.<sup>19</sup>

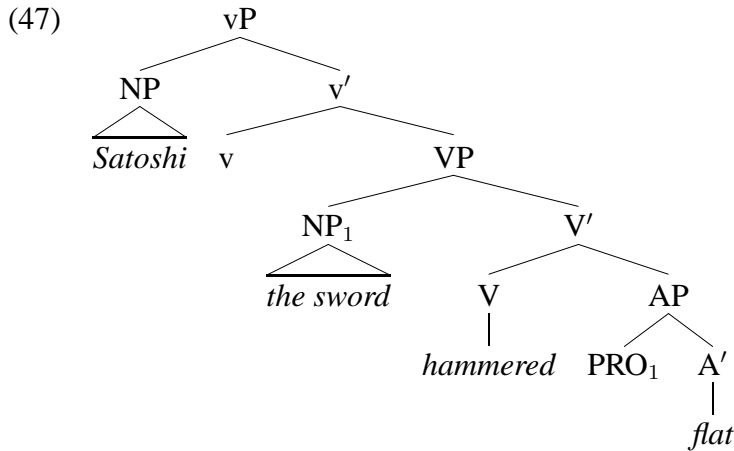
Note that this representation preserves Kayne’s conclusion that the first NP of the double object construction is not an argument of the verb. Even with these changes, this NP is the subject of an embedded small clause, just as it was on the simpler representation we examined in section 1. Therefore, the fact that the double object frame cannot be mapped into Nominalizations still follows.

With respect to introducing the CAUSE BECOME meaning into the double object frame, one obvious way to achieve this would be to introduce a phonologically empty element into the structure that is responsible for CAUSE BECOME — analogous to the case of *open*. This direction would be in line with Stechow’s approach.

But there is reason to pursue a different approach. Snyder (2001) provides evidence from language variation and language acquisition in favour of relating double object constructions to resultatives. He proposes that both are governed by the same parameter of grammar, which explains the correlations which he found among them. Interestingly, the interpretation of resultatives like (46) on the following page require the same CAUSE BECOME component, without there being any counterpart in the structure. Translating Stechow’s (1995) proposal into our syntax, (46a) would have the structure in (47):

<sup>19</sup>In this representation *the map* does not have structural Accusative Case, and behaves something like an indirect object as a consequence. Movement of *Satoshi* past *the map* therefore works along the same lines that raising past an indirect object does (i.e., “Satoshi seems to Thilo to have the map.”)

- (46) a. Satoshi hammered the sword flat.  
 b. Satoshi's hammering the sword caused the sword to become flat.



Given the standard mechanisms of compositional interpretation, the interpretation of (47) would crash at the point where we try to combine the Small Clause with the verb *hammer*, due to a type mismatch: the Small Clause is a property of events (type  $\langle i, t \rangle$ ) and the verb is of type  $\langle e, \langle e, \langle i, t \rangle \rangle \rangle$ , requiring an individual object. Stechow proposes the following interpretation principle for resultatives to resolve this mismatch:

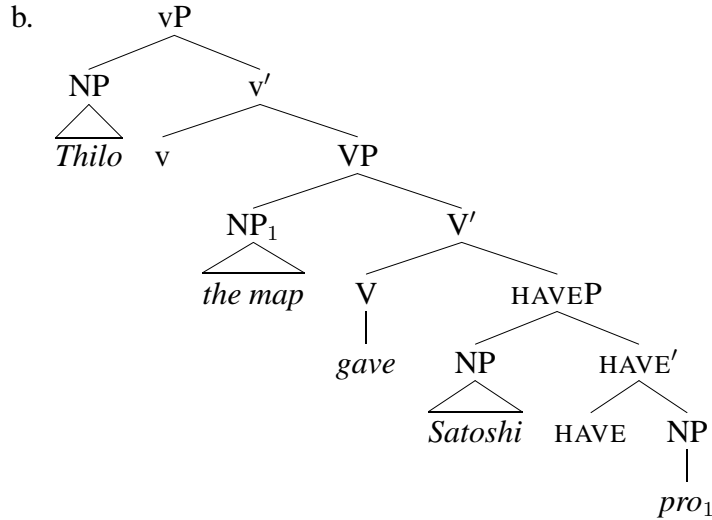
- (48) If  $\alpha = [\gamma_V \beta_{Small\ Clause}]$  and  $\beta'$  is of type  $\langle i, t \rangle$  and  $\gamma'$  is of type  $\langle e, \dots \langle e, \langle i, t \rangle \rangle \rangle$  (an n-place predicate), then  $\alpha' = \lambda x_1 \dots \lambda x_n \lambda e. \gamma'_e(x_1) \dots (x_n) \ \& \ \exists e' [\text{BECOME}_{e'}(\beta') \ \& \ \text{CAUSE}(e')(e)]$

Compositional interpretation then proceeds as indicated in (49), and we derive an intuitively appropriate interpretation for (46a). See Stechow (1995) for more details and discussion.

- (49) a.  $[_{V'} \text{hammered} [_{AP} \text{PRO}_1 \text{flat}]] \rightarrow \lambda x \lambda y \lambda e. \text{hammer}_e(x)(y) \ \& \ \exists e' [\text{BECOME}_{e'}(\lambda e'' . \text{flat}_{e''}(x_1)) \ \& \ \text{CAUSE}(e')(e)]$
- b.  $[_{vP} \text{Satoshi } v [_{VP} [\text{the\_sword}]_1 [_{V'} \text{hammered} [_{AP} \text{PRO}_1 \text{flat}]]]] \rightarrow \lambda e. \text{hammer}_e(\text{the\_sword})(\text{Satoshi}) \ \& \ \exists e' [\text{BECOME}_{e'}(\lambda e'' . \text{flat}_{e''}(\text{the\_sword})) \ \& \ \text{CAUSE}(e')(e)]$
- c. Satoshi's hammering the sword caused it to become flat.

Our suggestion is that the interpretation of (43) proceeds in a manner essentially analogous to (46a). The structure we assume is given in (50), and the crucial steps in the interpretation in (51). The principle in (48) allows us to combine the verb *give* with the small clause headed by HAVE.

(50) a. Thilo gave Satoshi the map.



(51) a. [ gave [<sub>HAVEP</sub> Satoshi HAVE pro<sub>1</sub> ] ] →  
 $\lambda y \lambda x \lambda e$  [give<sub>e</sub>(y)(x) &  $\exists e'$ [BECOME<sub>e'</sub>( $\lambda e''$ .have<sub>e''</sub>(x<sub>1</sub>)(Satoshi)) & CAUSE(e')(e)]

b. [ Thilo [ [the map] [ gave [<sub>HAVEP</sub> Satoshi HAVE pro<sub>1</sub> ] ] ] ] →  
 $\lambda e$ [give<sub>e</sub>(the\_map)(Thilo) &  $\exists e'$  [BECOME<sub>e'</sub>( $\lambda e''$ .have<sub>e''</sub>(the\_map)(Satoshi)) & CAUSE(e')(e)]

Both the double object and resultative constructions depend on the interpretation principle in (48) and this is how we propose to capture the connection between these constructions. (See also Beck and Snyder (2001).) Snyder's observation also extends to certain NP+PP frames — we will come back to this shortly.

Note that with (50) as the structure for double object *give*, *again* can find an adjunction site that yields a resultative reading (the small clause) as well as adjunction sites that yield the repetitive reading (for example vP). Thus we make the desired predictions. When *again* is adjoined to the small clause, as in (52), the interpretation in (53) results; and when it adjoins to vP, as in (54), the interpretation in (55) is derived.

(52) Thilo [<sub>VP</sub>the map]<sub>1</sub> [<sub>V'</sub> give [<sub>HAVEP</sub> [Satoshi HAVE pro<sub>1</sub>] again ] ] ]

(53) a.  $\lambda e$ [give<sub>e</sub>(the\_map)(Thilo) &  $\exists e'$ [BECOME<sub>e'</sub>( $\lambda e''$ .again<sub>e''</sub>( $\lambda e'''$ .have<sub>e'''</sub>(the\_map)(Satoshi))) & CAUSE(e')(e)]

- b. Thilo's giving of the map caused Satoshi to come to once more have the map.

(54) [<sub>vP</sub> [ Thilo [<sub>VP</sub> the map<sub>1</sub> [<sub>V'</sub> give [<sub>HAVEP</sub> Satoshi HAVE pro<sub>1</sub>]]] again ]

- (55) a.  $\lambda e.$ again<sub>e</sub>( $\lambda e'$ [give<sub>e'</sub>(the\_map)(Thilo) &  $\exists e''$ [BECOME<sub>e''</sub>( $\lambda e'''$ .have<sub>e'''</sub>(the\_map)(Satoshi)) & CAUSE(e'')(e')])
- b. Once more, Thilo's giving of the map caused Satoshi to come to have the map.

As a first conclusion, we see that the existence of a restitutive reading and the nature of that reading confirm the suggestions made in section 1 regarding the structure of double object constructions. The proposed small clause is available as the constituent that denotes the result state, and its head predicate HAVE yields the intuitively correct restitutive reading. We have added an empty pronoun to the proposed structure to capture the dual role of the second object in the argument structure of the sentence.

The other types of double object verbs mentioned above have restitutive readings parallel to (39), (see (56) and (57)) as would be expected from the analysis sketched in section 1.

(56) *benefactives*:

Thilo sewed Satoshi a flag again.

- a. Thilo sewed Satoshi a flag, and that had happened before.  
b. Thilo sewed Satoshi a flag, and Satoshi had had a flag before.

(57) *motion verbs*:

Thilo sent Satoshi the map again.

- a. Thilo sent Satoshi the map, and that had happened before.  
b. Thilo sent Satoshi the map, and Satoshi had had the map before.

All types of double object verbs have restitutive readings in the double object construction, and that reading is the same across these verbs: the first object is restored to possession of the second object. This confirms the existence of a small clause with a head predicate HAVE in all these data: *again*, on the restitutive reading, takes as its semantic argument a property of events of the possession type, and must modify the corresponding constituent in the syntax. We conclude that the combination of the analysis of double object constructions sketched in section 1, and Stechow's theory of *again* makes precisely the desired predictions.

### 3.2 *The NP+PP frame and again*

We now turn to the NP+PP frame of the same verbs. The relevant facts are listed below.

(58) *give*:

Thilo gave the map to Satoshi again.

- a. Thilo gave the map to Satoshi, and that had happened before.
- b. Thilo gave the map to Satoshi, and Satoshi had had the map before.

(59) *benefactives*:

Thilo sewed a flag again for Satoshi.<sup>20</sup>

- a. Thilo sewed a flag for Satoshi, and that had happened before.
- b. Thilo sewed a flag for Satoshi, and there had been a flag before.

(60) *motion verbs*:

Thilo sent the plane to New York again.

- a. Thilo sent the plane to New York, and that had happened before.
- b. Thilo sent the plane to New York, and the plane had been in New York before.

Observe that the result states that restitutive *again* detects in these data are not uniformly states of possession. In the benefactive case, it is a state of existence; and in the case of motion verbs, an object is restored to a location. This variation as such confirms the claim from section 1 that the semantics of the NP+PP frame is not identical to the double object frame, and in particular, does not uniformly involve HAVE. Restitutive *again* sharpens our intuitions about the semantic differences between the two frames.

What more does restitutive *again* tell us about the syntax and semantics of the NP+PP frame? The fact that restitutive readings are possible with these predicates shows that the following result states must be available as the meanings of syntactic constituents:

(61)  $\lambda e.\text{have}_e(\text{the\_map})(\text{Satoshi})$

(62)  $\lambda e.\exists x[\text{flag}_e(x)]$

(63)  $\lambda e.\text{AT}_e(\text{New York})(\text{the\_plane})$

Let's look at motion verbs first. We propose that the result states are the denotations of the PPs in the structures of these predicates, since the crucial information about the result state comes from the preposition. This is seen more clearly

<sup>20</sup>For the reason *again* precedes the *for*-phrase in this example, see the discussion surrounding (79).

in the following paradigm (In each case, the sentence in (a) has the restitutive reading in (b)).

- (64) a. Satoshi pushed the cookies under the bed again.  
 b. Satoshi pushed the cookies under the bed, and the cookies had been under the bed before.
- (65) a. Satoshi kicked the ball onto the field again.  
 b. Satoshi kicked the ball onto the field, and the ball had been on the field before.
- (66) a. Thilo threw the ball behind the fence again.  
 b. Thilo threw the ball behind the fence, and the ball had been behind the fence before.

Given these observations, a complete semantic interpretation for a *send* NP+PP frame example must look as in (67).

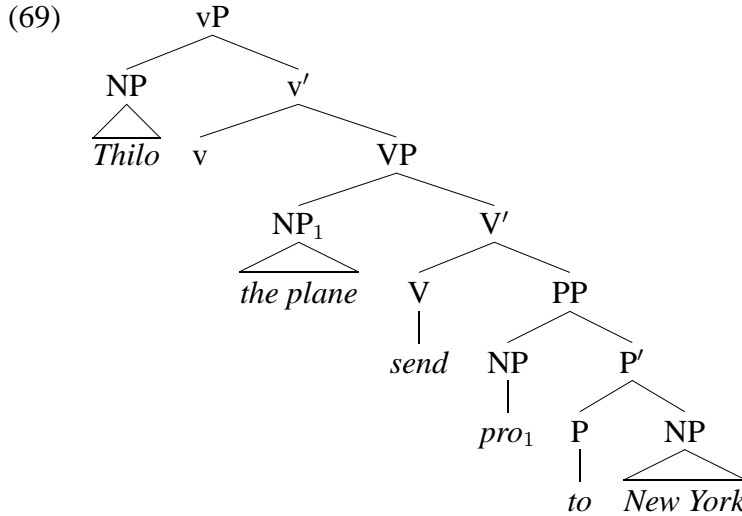
- (67) a. Thilo sent the plane to New York.  
 b.  $\lambda e[\text{send}_e(\text{the\_plane})(\text{Thilo}) \ \& \ \exists e'[\text{BECOME}_{e'}(\lambda e'' . \text{AT}_{e''}(\text{New York})(\text{the\_plane})) \ \& \ \text{CAUSE}(e')(e)]$   
 c. Thilo's sending the plane caused the plane to come to be in New York.

Turning to the compositional derivation of this interpretation, note that the PP in example (67), according to standard assumptions, would have the denotation in (68). Combination with the meaning of the NP *the plane* would yield the desired result state (63). Once more, though, we need the referent of that NP to be the argument of *send* as well.

- (68)  $\lambda x \lambda e . \text{AT}_e(\text{New York})(x)$

Note moreover that as in the double object frame, a source for the CAUSE BECOME component in the interpretation of these predicates is needed. We suggest to derive (67) from the structure in (69). (69) is an exact match of the structure discussed in section 1, with the exception that we have introduced an anaphoric element (in this example, for the referent of *the plane*). In this case, we propose to put this anaphoric item in the Specifier of PP, as shown.<sup>21</sup>

<sup>21</sup>As in the double object frame, we've represented the silent argument in (69) with *pro*, though in this case it could easily be PRO, as in Heim and Kratzer (1998).



The derivation is quite parallel to the derivation given for the double object construction above. The special interpretation principle (48) is needed to combine *send* and the PP *to NY*; the rest is canonical.

- (70) [ send<sub>[PP]pro<sub>1</sub></sub> [to New York]] →  
 $\lambda y \lambda x \lambda e[\text{send}_e(y)(x) \ \& \ \exists e'[\text{BECOME}_{e'}(\lambda e''. \text{AT}_{e''}(\text{New York})(x_1)) \ \& \ \text{CAUSE}(e')(e)]$

This structure offers adjunction sites for *again* that yield the restitutive and repetitive readings. When *again* adjoins to PP, as in (71), the restitutive reading results (see (72)); and when it adjoins to vP, as in (73), the repetitive reading emerges (see (74)).

- (71) Thilo [ <sub>VP</sub>the plane<sub>1</sub> [ <sub>V'</sub> send [ <sub>PP</sub>[pro<sub>1</sub> to New York] again ] ] ]  
 (72)  $\lambda e[\text{send}_e(\text{the\_plane})(\text{Thilo}) \ \& \ \exists e'[\text{BECOME}_{e'}(\lambda e''. \text{again}_{e''}(\lambda e'''. \text{AT}_{e'''}(\text{New York})(\text{the\_plane}))) \ \& \ \text{CAUSE}(e')(e)]$   
 (73) [ <sub>vP</sub> Thilo [ [ <sub>VP</sub>the plane<sub>1</sub> [ <sub>V'</sub> send [ <sub>PP</sub>pro<sub>1</sub> to New York]]]] again ]  
 (74)  $\lambda e.\text{again}_e(\lambda e'[\text{send}_{e'}(\text{the\_plane})(\text{Thilo}) \ \& \ \exists e''[\text{BECOME}_{e''}(\lambda e'''. \text{AT}_{e'''}(\text{New York})(\text{the\_plane})) \ \& \ \text{CAUSE}(e'')(e')])$

One may balk at the unconventional claim in (71) that *again* can adjoin to a PP. But note that this PP is a small clause,<sup>22</sup> and as such has the same status as the bracketed PP in (75).

- (75) Satoshi talked [ <sub>PP</sub>Thilo into a stupor].

<sup>22</sup>Treating argument PPs like these as small clauses embedded within VPs is a view defended on independent grounds by Pesetsky (1995).

This PP can host *again* as the restitutive reading in (76) shows.

- (76) a. Satoshi talked [<sub>PP</sub>[Thilo into a stupor] again].  
 b. Satoshi's talking brought it about that Thilo was once more in a stupor.

Using the interpretation principle in (48) to introduce the CAUSE+BECOME part to the meanings of these frames is in keeping with Snyder's results, as these particular NP+PP frames were included in the group of constructions that he found to correlate with resultatives.<sup>23</sup>

The case of benefactives like (52) looks a little different. Let's first make sure that the restitutive reading of (52) is what we claim it is, and is indeed weaker than the restitutive reading of the corresponding double object frame. Consider the following scenario.

- (77) Satoshi's favourite little cousin has a tree house, which used to include its own, exciting and exotic flag. The flag has vanished under mysterious circumstances, and the cousin is devastated. Satoshi would like to make her a new flag, but he can't sew. Satoshi's friend Thilo, ever helpful, ...  
 a. ... sewed a flag again for Satoshi.  
 b. # ... sewed Satoshi a flag again.

The sentence in (77a) is appropriate, and according to our claims, its presuppositions are met (i.e. there used to be a flag). The sentence in (77b), however, is not appropriate, confirming the stronger presuppositions we assume for it (i.e. Satoshi used to have a flag), which are not met in this context. As expected, then, the restitutive readings for these two frames pattern with the contrasts we saw in section 1 (see (18)).

The question is, then, how to derive the restitutive reading of the NP+PP frame for these verbs. We assume, once more following section 1, that the *for*+PP is some kind of adjunct modifier. It does not figure into the derivation of the restitutive reading at all. Thus we expect that the sentence with the *for*+PP has the same type of restitutive reading as the same sentence without the *for*+PP, and this is indeed the case:

- (78) a. Thilo sewed a flag again.  
 b. Thilo sewed a flag, and there had been a flag before.

The adjunct status of the *for*-phrase is confirmed by the fact that (79), where *again* falls outside the constituent containing the *for*-phrase, allows only a repetitive reading.

<sup>23</sup>Snyder investigates *to*-datives and *put*-locatives, but not *for*-benefactives.



(79) Thilo sewed a flag for Satoshi again.

The lexical semantics of *sew*, and its decomposition in the syntax, is thus responsible for the restitutive reading. We will not reflect upon the fine structure of creation verbs any further here.

Finally, a comment on our first example in this subsection: a sentence with *give* (see (58)). In this case, so far as our intuitions can tell, the restitutive reading of the NP+PP frame is indistinguishable from the restitutive reading for the double object frame. We predict that the derivation of the NP+PP frame follows the steps of the *send*-example in (54). The predicate of events that *again* modifies, then, is the one in (80), while our intuitions were described with (81).

(80)  $\lambda e. AT_e(\text{the\_map})(\text{Satoshi})$

(81)  $\lambda e. HAVE_e(\text{the\_map})(\text{Satoshi})$

So far as we can tell, (80) is indistinguishable from (81): that is, the map being with Satoshi is indistinguishable from the map being in Satoshi's possession.

#### 4 Conclusions

Restitutive *again* is a detector of result state denoting constituents and a clue to their meanings. The *again*-test confirms Kayne's conjecture that double object constructions have a small clause constituent in them, and identifies that head as HAVE. It confirms that the corresponding NP+PP constructions are different, and are not transformationally related to the double object frame. Specifically, the lower predicate is not in general HAVE. It is provided by the preposition in the case of motion verbs, and by the lexical result state of creation verbs.

The fact that those result states have to be available for 2-object verbs establishes the need for some semantic glue that relates the result state to the event expressed by the verb (giving, sending etc.). We have speculated that the same interpretation principle that is at work in resultative constructions is at work here as well. This ties in with Snyder's (2001) evidence that these constructions are governed by the same grammatical parameter as resultatives.

It is interesting that the evidence gained from a closer look at the syntax of these constructions, converges with the evidence gained from a closer look at their semantics, particularly in view of the fact that the resulting analysis is not what a naïve approach to either syntax or semantics would suggest.

The differences between the semantic and syntactic evidence are also interesting. In order to make the interpretation of these syntactic representations transparent, we have had to make several unconventional claims about their structure. We have argued that in the NP+PP frame of motion verbs, the PP actually consti-

tutes a small clause. And we have concluded that in this small clause, as well as in the HAVE small clause in the double object frame, there is a silent argument that is bound to the object of the higher verb. Putting an empty pronoun in the Specifier of PP, as we do for the NP+PP frame, has a precedent in Heim and Kratzer (1998). It's also needed in the analysis of resultatives like (82) (compare von Stechow (1995)).

(82) Thilo ground the spätzle into the counter.

However, putting a silent pronoun in object position, as we've done in the double object frame, is, so far as we know, novel. In neither case are we aware of a theory of empty categories that would allow silent pronouns in these positions. We suggest that such a theory is called for.

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