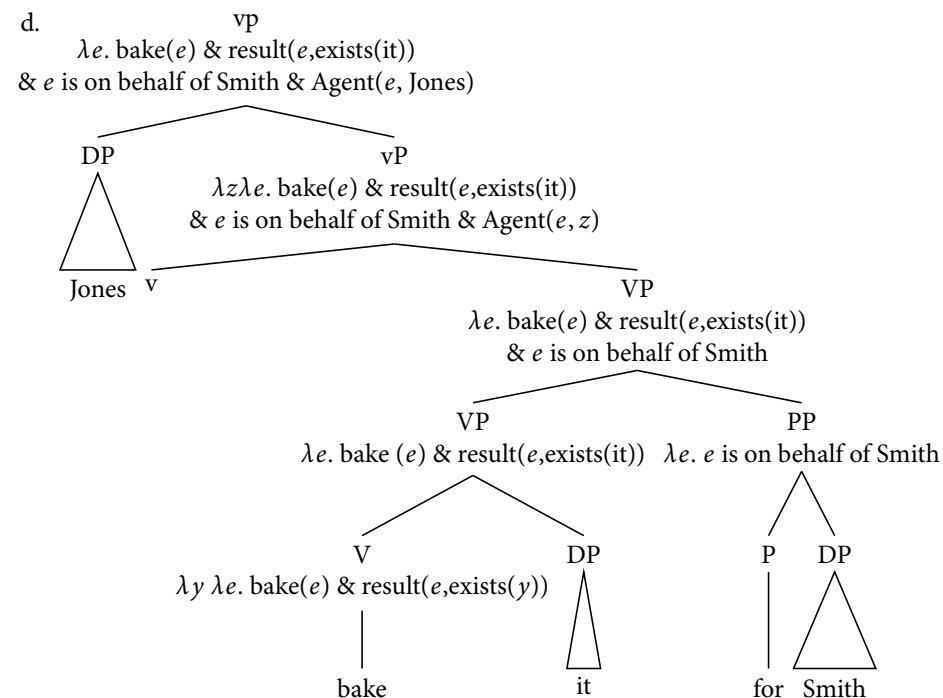# A Constructionist View

Last week, I sketched a prevalent view that the argument structure of the frames in the dative alternation have different argument structures. The Green-inspired idea is that paraphrases for those argument structures is something like what (1) illustrates.

(1) a.   i.   X V Y to Z
              X makes Y go to Z by Ving it
         ii.   X V Y for Z
              X makes Y on behalf of Z
     b.   X V Z Y
          X causes Z to have Y by Ving Y

To spell out these paraphrases, and sharpen them so that they are correct, means finding the correct predicates that name the relations among arguments and to spell out how they combine. Today, we will investigate a constructionist method of doing that.

Let's start with the *for* examples. Adopting the little v hypothesis, we could build the meanings as (2) does.

(2) Jones baked it for Smith.
     a. $[\![v]\!] = \lambda z\, \lambda e.\ \text{Agent}(e,z)$
     b. $[\![\text{for}]\!] = \lambda x\, \lambda e.\ e$ is on behalf of x
     c. $[\![\text{bake}]\!] = \lambda y\, \lambda e.\ \text{bake}(e)\ \&\ \text{result}(e,\text{exists}(y))$

d.

vp
$\lambda e.\ \text{bake}(e)\ \&\ \text{result}(e,\text{exists(it)})$
$\&\ e$ is on behalf of Smith $\&\ \text{Agent}(e, \text{Jones})$

DP — Jones

vP
$\lambda z\lambda e.\ \text{bake}(e)\ \&\ \text{result}(e,\text{exists(it)})$
$\&\ e$ is on behalf of Smith $\&\ \text{Agent}(e, z)$

v

VP
$\lambda e.\ \text{bake}(e)\ \&\ \text{result}(e,\text{exists(it)})$
$\&\ e$ is on behalf of Smith

VP
$\lambda e.\ \text{bake}\ (e)\ \&\ \text{result}(e,\text{exists(it)})$

PP
$\lambda e.\ e$ is on behalf of Smith

V
$\lambda y\,\lambda e.\ \text{bake}(e)\ \&\ \text{result}(e,\text{exists}(y))$ — bake

DP — it

P — for

DP — Smith

We should treat the *for* PP as an adjunct. That is, it is optional and promiscuous.

(3) a.   Jones baked it.
     b.   Jones ran for Smith.
     c.   Jones died for Smith.
   d.   ?* It seems for Smith that things could be different.

Notice that the denotation of *bake* has built into it a kind of causative. I mean for the "result" predicate to mean something like "e's result is exist(y)." (This is a way of characterizing creation verbs that Arnim von Stechow cites Angelika Kratzer

as endorsing in an unpublished paper. It is similar to the treatment in Dowty 1979, although somewhat streamlined.)

How do we get the Greenian double object construction out of this? As you saw in the Harley paper, one idea about the syntax of these constructions is that the two objects form a constituent that excludes the verb. A reason for suspecting this is the scope asymmetry described in Barss and Lasnik (1986) and illustrated by (4).

(4) a.   Jones showed them each other's pictures.
     b.   * Jones showed each other's parents the children.

This could be explained if there is a phrase that contains the second object that doesn't contain the first object. That would, under standard definitions, make the second object fall in the scope of the first, but prevent the first object from falling in the scope of the second.

(5)
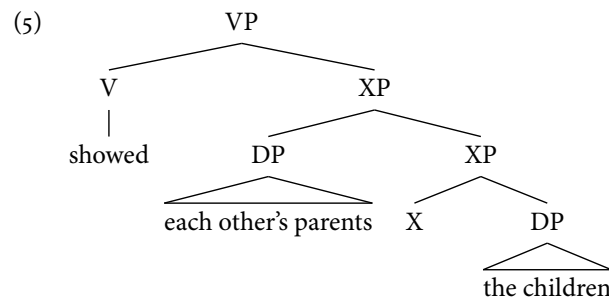
In fact, the scope asymmetry between the first and second object in the double object construction is stronger than expected. It prevents the first object from falling within the scope of quantifiers in the second object. That is not usually the case for asymmetric c-commanders.

(6) a. Jones showed a different child every toy.
         *every toy > a different child
     b. A different child took every toy.
         every toy > a different child

It's not that the second object cannot QR, as we can see from (7).

(7) a. A different teacher gave us every book.
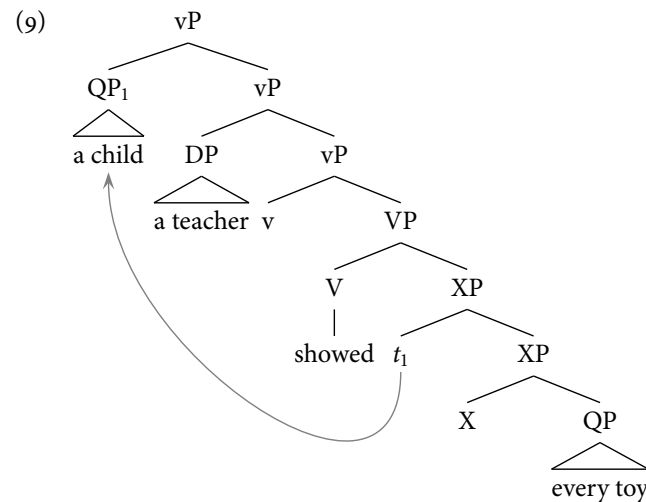   b. Jill gave someone everything that Sean did △.

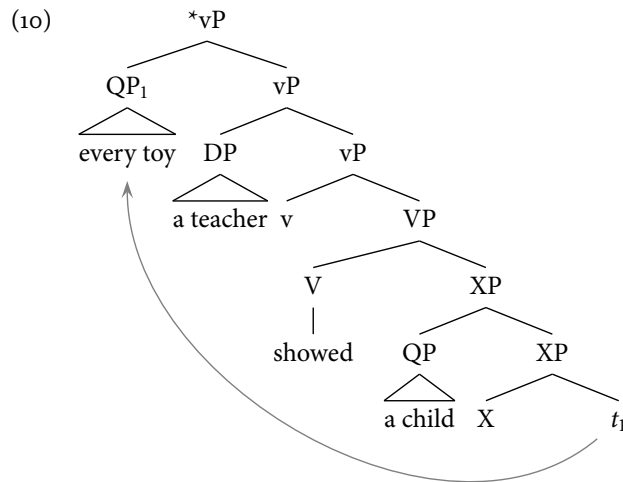Bruening (2001) makes a proposal about this that invokes a locality condition he formulates as (8).

(8) Shortest

A pair P of elements $[\alpha, \beta]$ obeys Shortest iff there is no well-formed pair P′ which can be created by substituting γ for either α or β, and the set of nodes c-commanded by one element of P′ and dominating the other is smaller than the set of nodes c-commanded by one element of P and dominating the other.

(Bruening 2001, (40): 247)

Bruening now assumes that v is the item that attracts quantificational DPs, and that Shortest causes v to attract the highest DP first. Moreover, for semantic reasons, QR cannot move a quantificational object any lower than the constituent containing the subject. So Shortest is going to favor (9) over (10).

(9)

(10)

```
              *vP
         ┌─────┴─────┐
       QP₁           vP
      △          ┌────┴────┐
  every toy     DP         vP
             a teacher  ┌───┴───┐
                        v       VP
                     showed ┌────┴────┐
                            V         XP
                            |     ┌───┴───┐
                         showed  QP       XP
                                 △     ┌──┴──┐
                             a child   X     t₁
```

(12)

```
              *vP
         ┌─────┴─────┐
       QP₁           vP
      △         ┌────┴────┐
  a child     QP₂         vP
            △         ┌────┴────┐
        every toy    DP         vP
                  a teacher  ┌───┴───┐
                             v       VP
                          showed ┌───┴───┐
                                 V       XP
                                 |    ┌──┴──┐
                              showed  t₁    XP
                                         ┌──┴──┐
                                         X     t₂
```
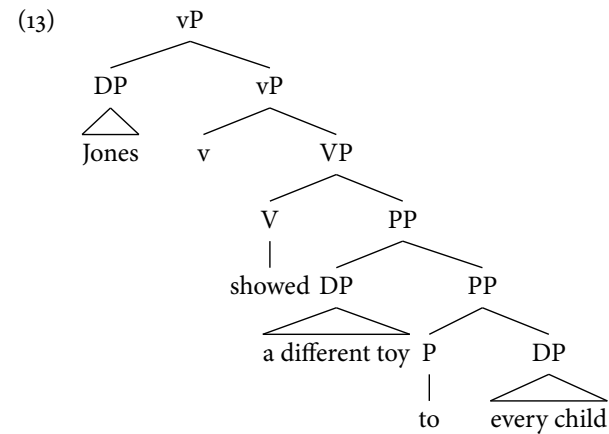
Once the highest QP has QR'd, then the lower one can because Shortest no longer prevents that. However, when the second QP QRs, Shortest does force it to go to the lower of the two possible positions above vP — that is, it prevents (11) and allows only (12).
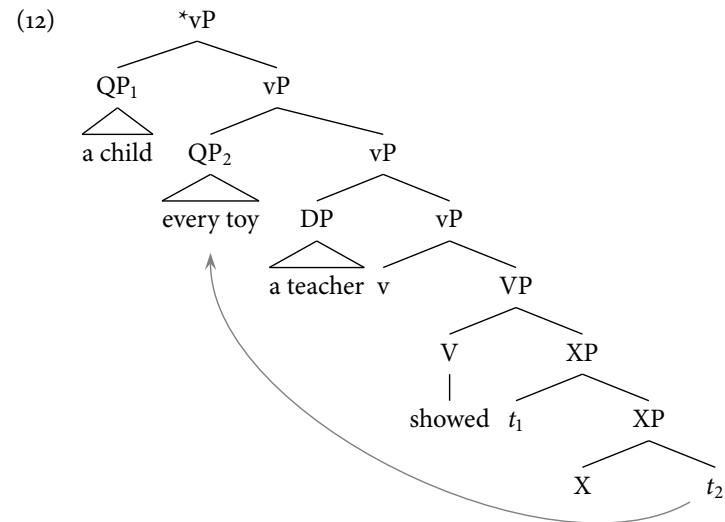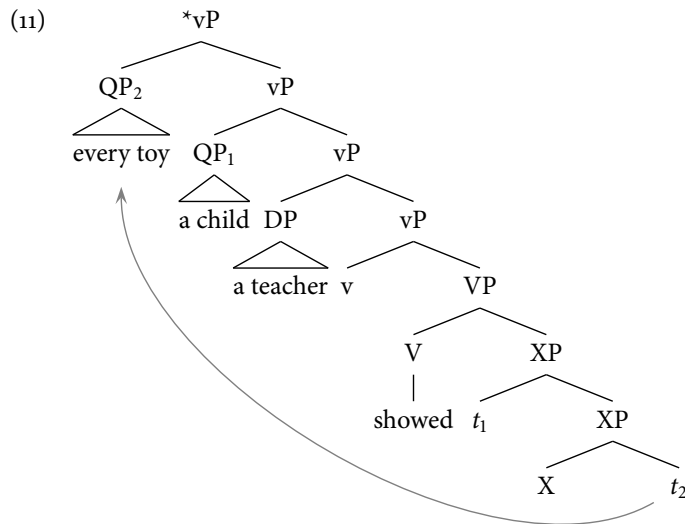
Notice that both quantificational objects are able to scope wider than the subject, as desired. To get a reading in which the subject scopes widest, we make the movement of the subject into its surface position feed the semantics.

For the DP+PP frame, where both scopes are possible, Bruening (2001) suggests a structure different from the one indicated in (2), which Shortest would not apply to correctly. Instead, he suggests (13), which is argued for in Pesetsky (1995).
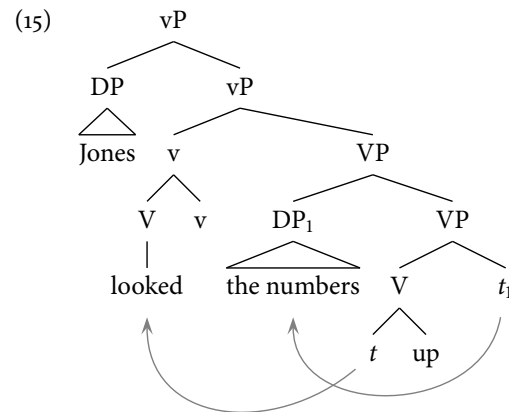
(11)

```
              *vP
         ┌─────┴─────┐
       QP₂           vP
      △         ┌────┴────┐
  every toy   QP₁         vP
            △        ┌────┴────┐
        a child     DP         vP
                 a teacher  ┌───┴───┐
                            v       VP
                         showed ┌───┴───┐
                                V       XP
                                |    ┌──┴──┐
                             showed  t₁    XP
                                        ┌──┴──┐
                                        X     t₂
```

(13)

```
                 vP
          ┌───────┴───────┐
         DP               vP
        △           ┌─────┴─────┐
      Jones         v           VP
                           ┌─────┴─────┐
                           V           PP
                           |        ┌──┴──┐
                        showed      DP    PP
                                   △    ┌──┴──┐
                           a different  P    DP
                                toy     |    △
                                        to  every child
```

Shortest will allow *a different toy* to QR first, obviously, but it will also allow (14).
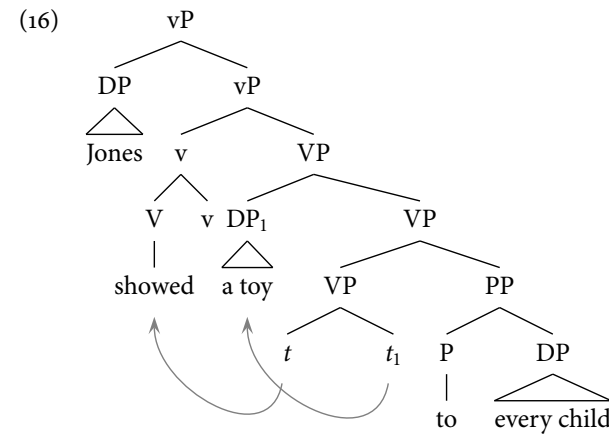
(14)
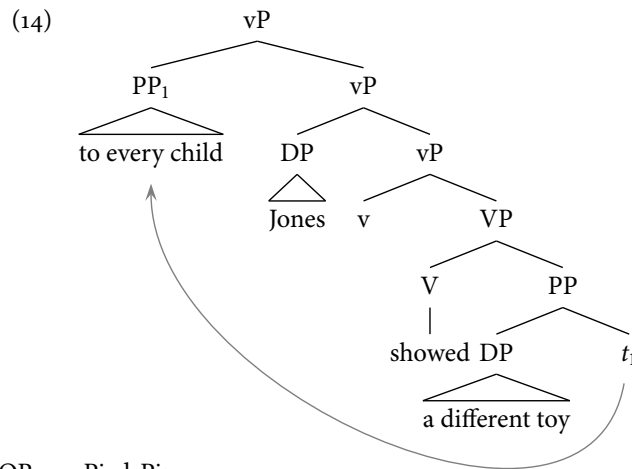
QR can Pied-Pipe.

We could use Bruening's system, I think, and still adopt (2) if we recognize that English has Object Shift.

(15)

This would permit derivations like that indicated in (16).

(16)

Object Shift is independent of QR — that is, Shortest does not make them compete. That means that Shortest doesn't force one of these operations to happen before the other, and unless something else does, that will allow representations in which either scope is produced. (Alternatively, we could let object shift be optional, or optionally semantically contentful.)

The scope facts, then, might suggest different structures, and, moreover, a small clause like analysis of the double object construction. Further, there is evidence that the first object of the double object construction behaves as if it is on a left branch for the purposes of evaluating the Left Branch Condition. (See Kayne 1984.)

(17) Left Branch Condition

Movement out of a phrase in Specifier position is ungrammatical.

a. Which royal child did you see a book about ↑_____ in the window?

b. * Which royal child did you see a book about ↑_____ burn?

(18) a. ? Which royal child have you bought a book about ↑_____ for your parents?

b. * Which royal child have you bought the parents of ↑_____ a book?

There is some difficulty, however, in evaluating the full range of relevant data — see Kuno (1973).

And finally, Beck and Johnson (2004) argue for a small clause analysis from the behavior of *again*.

(19) Satoshi closed the door again

    a. Satoshi opened the door, and that had happened before.

                                 (repetitive)

    b. Satoshi opened the door, and the door had been open before.

                                 (restitutive)

Satoshi again closed the door.

    a.   Satoshi opened the door, and that had happened before.

                                 (repetitive)

    b.   * Satoshi opened the door, and the door had been open before.
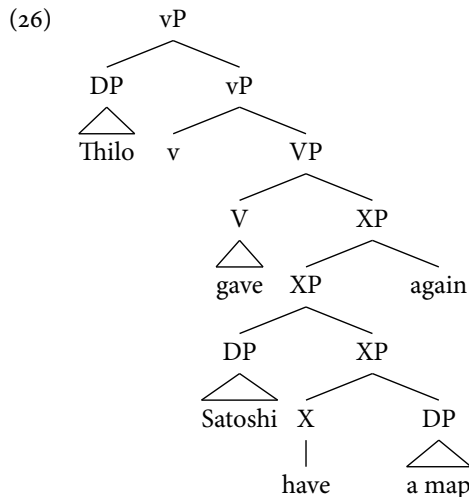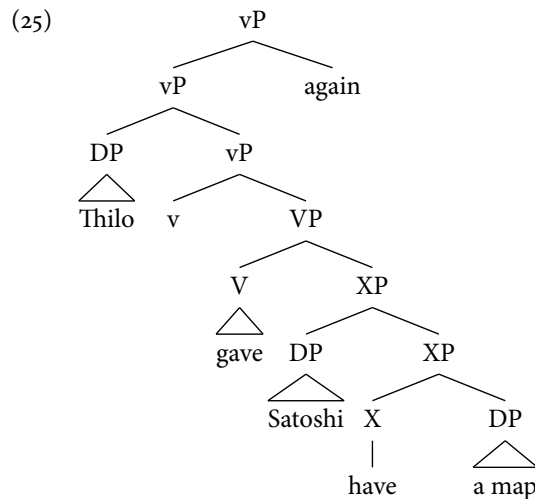
                                 (restitutive)

von Stechow (1996) argues for a syntactic account of this ambiguity, one that supports the construction view of argument structure.

(20) ⟦again⟧ p = 1 if p is true and p was true previously.

(21)

(22)

(23)
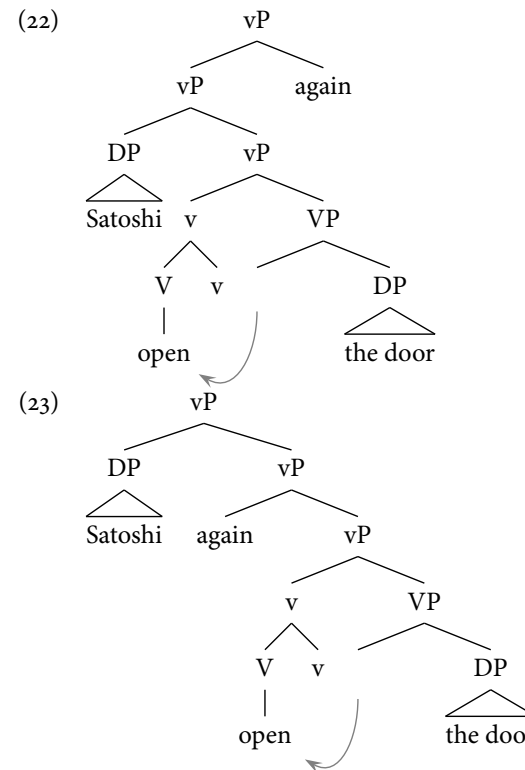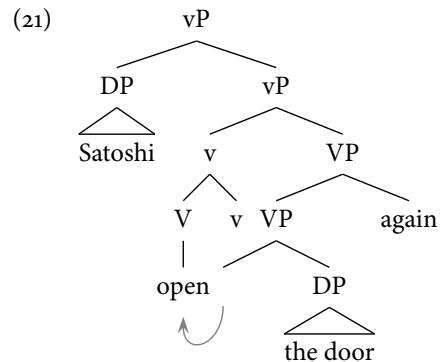
If that is correct, we can detect the meanings of the parts of the double object construction.

(24) Thilo gave Satoshi a map again.

    a. Thilo gave Satoshi a map, and that had happened before.

    b. Thilo gave Satoshi a map, and Satoshi had had a map before.

(25)

```
                    vP
                  /    \
                vP      again
              /    \
            DP      vP
           /\      /   \
        Thilo    v      VP
                      /    \
                     V      XP
                    /\     /   \
                 gave    DP      XP
                        /\      /   \
                   Satoshi  X      DP
                            |      /\
                          have   a map
```

(26)

```
                vP
              /    \
            DP      vP
           /\      /   \
        Thilo    v      VP
                      /     \
                     V       XP
                    /\      /    \
                 gave     XP      again
                        /    \
                      DP      XP
                     /\      /   \
                Satoshi  X      DP
                         |      /\
                       have   a map
```
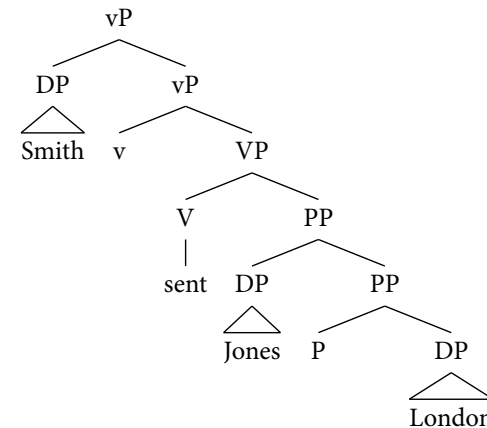
(24b) is the harder reading to get, so let me put (24) in a context that enables it.

(27)   Thilo and Satoshi bring different skills to the arduous task of traveling. Thilo is superb at managing all the details, and Satoshi is great at finding interesting places to go. When they met in Kansas City for a week of sightseeing, for instance, Thilo arranged the rental car and hotels and Satoshi made up a schedule of places to visit and brought a detailed map. On their very first morning, though, Satoshi lost the map. Fortunately, Thilo gave Satoshi a map again after picking one up at the car rental office.

These are data that have been offered in support of the view that the double object frame involves a small clause. The test from *again* suggests, moreover, that something like "have" is what heads that small clause. Pesetsky (1995), Bruening (2001) and Harley (2002) suggest that the PP frame also makes up a small clause, so that we'd have a structure like (28).

(28)   Smith sent Jones to London.

```
                vP
              /    \
            DP      vP
           /\      /   \
        Smith    v      VP
                      /    \
                     V      PP
                     |     /   \
                   sent   DP     PP
                         /\     /   \
                    Jones   P      DP
                                   /\
                                London
```

Bruening (2010) argues that we shouldn't let the PP frame have a small clause structure as well. His central novel argument towards this end has to do with idioms, but he rehearses two other well known differences between the two constructions that we would be well advised to keep in mind. One is that the Left Branch Condition does not hold of the object in the PP frame. The examples in (29), for instance, contrast with those in (17).

(29)   a.   ? Who did you send a book about ___ to all the students in the class?

       b.   ? What did you buy books about ___ for the children in the hospital?

The other two are that the double object frame does not show up in nominalizations, but the PP frame does. (A discovery of Ross 1974.)

(30)   a.   the gift of books to the children

       b.   the purchase of bangles for Moira

(31) a. * the gift of them of the books

      b. * the purchase of Moira of bangles

Kayne (1984) relates this to the fact that small clauses are not possible in nominalizations either.

(32) a. * the belief of Moira happy

      b. * the cause of Moira happy

And the other difference between the two frames shows up in Heavy NP Shift, which can only grammatically apply to the object in the PP frame.

(33) a. * Jones gave   this every one of his neighbors.

      b.   Jones gave   to them every one of his bulbs.

    Bruening's idiom argument is based on the absence of idioms that are made up of the verb and the first of the two objects in the double object frame. He claims there is no idiom of the sort that (34) illustrates.

(34) Jones [sent the little bird] X.

Idioms that include the verb in a double object construction are made up from the second object:
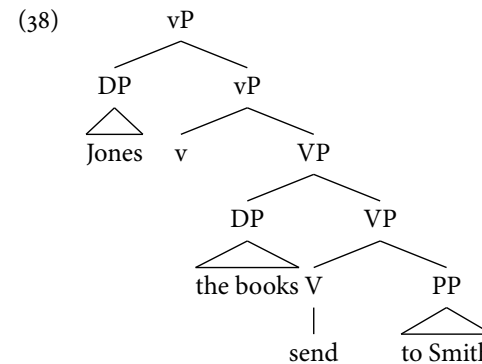
(35) Jones gave X the creeps.

By contrast, the PP frame supports idioms that involve the verb and either of the other terms.

(36) a. This gives rise to X.

      b. Jones sent X to the showers.

He suggests that what controls whether items can form an idiom or not is (roughly) (37).

(37) If X is part of an idiom, then Y can be too if X selects Y.

He assumes that the PP is selected by the verb, and suggests the structure in (38).

(38)

```
                vP
            ┌────┴────┐
           DP         vP
           △      ┌───┴───┐
         Jones    v       VP
                     ┌─────┴─────┐
                    DP           VP
                    △        ┌───┴───┐
               the books V       PP
                          │       △
                        send   to Smith
```
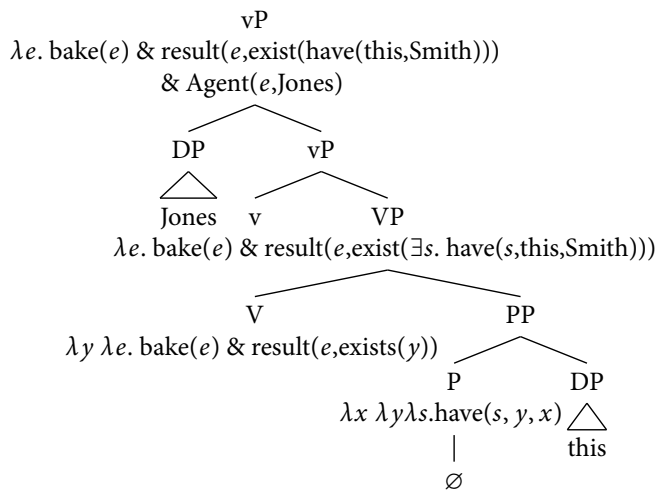
(This is equivalent to our (2), but with the order of composition reversed.) The first object in the double object construction, by contrast, is an argument of the embedded small clause, and not the verb. This predicts that both objects, in both frames, should be able to form an idiom with the verb, and these are not easily found.

    We should try to make sense of these differences in whatever model we come up with.

    This could be done with a small clause structure. We could make the silent head of that small clause responsible for adding the meaning to *bake* that creates the double object construction. It should include, then, the possession meaning. Harley's proposal is that it has just the possession meaning, that I will here gloss with "have." If so, we could put things together as (39) does.

(39) Jones baked Smith this.

      a. $[\![\varnothing]\!] = \lambda x \lambda y \lambda s.\ \mathrm{have}(s, y, x)$

vP
λe. bake(e) & result(e,exist(have(this,Smith)))
& Agent(e,Jones)

DP   vP

Jones   v   VP
λe. bake(e) & result(e,exist($\exists s$. have(s,this,Smith)))

V   PP
$\lambda y\, \lambda e$. bake(e) & result(e,exists(y))

P   DP
$\lambda x\, \lambda y \lambda s$.have($s, y, x$)

this

∅

What I have done here is make the small clause the object of *bake*. This would require, then, that the semantic types of *bake*'s object be flexible enough to include both clauses and individuals. I've also existentially closed the state variable in the small clause. I'm behaving, then, as if there is a general process of closing open predicates with an existential quantifier.

(4) is wrong because the "cause" element of Green's paraphrase is too strong. It is certainly less strong than the cause part of the meaning of *bake*.

(40) a.   * Jones baked a cake, but no cake got made.

      b.   Ms Jones baked Mr Smith a cake, but then forgot to give it to him.

In Beck and Johnson (2004), we suggested leaving the strength of cause intact, but weakening the "have" relation in the same way that progressive weakens achievement verbs.

(41) a.   Jill crossed the road.

      b.   Jill is crossing the road.

For (41a) to be true, the event described must include Jill getting from one side of the road to the other. We will want to build this into the meaning of the verb *cross*. (It's not in the meaning of the past tense, as we can see from the interpretation of *I saw Jill cross the road*.) For (41b) to be true, of course, this isn't the case. There's always that unseen truck, after all. One way of characterizing what distinguishes these examples goes like this: (41b) is true just in case the event involving Jill and

the road has a normal continuation that makes "Jill cross the road" true. Let "prog" represent a function that takes P and yields something that is true just in case the normal continuation of things creates a situation in which P is true. We could replace "have(x, y)" with "prog(have(x, y))" and weaken in an appropriate way the force of causation.
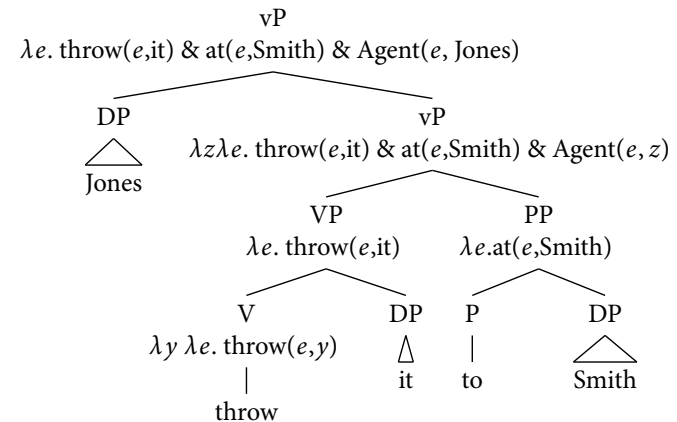
Two worries:

(42) a.   Progressives don't typically combine with stative predicates in English (**I am knowing this problem*.)

      b.   The second object is not a logical object of *bake* in (39). The creation of the second object no longer is part of the meaning of (39), but it is still part of the meaning of the sentence (**Jones baked Smith a cake, but no cake got made.*)

Now let's consider a case involving *to*. I'll use "at" to represent the predicate that extracts a reference to a location from a DP referring to a thing. So "at(e,x)" has a meaning paraphrased by "the location of x in the event e." We'll imagine that *to* can have as one of its meanings (43).

(43)   ⟦to⟧ = $\lambda x\, \lambda e$. at(e,x)

(44)   Jones threw it to Smith.

vP
λe. throw(e,it) & at(e,Smith) & Agent(e, Jones)

DP   vP

Jones $\lambda z \lambda e$. throw(e,it) & at(e,Smith) & Agent(e, z)

VP   PP
λe. throw(e,it) λe.at(e,Smith)

V   DP   P   DP
$\lambda y\, \lambda e$. throw(e,y)

it   to   Smith

throw

I think this *to* could also be treated as an adjunct. I believe its meaning remains constant across verbs, it is optional, and it can be found with any verb of motion.
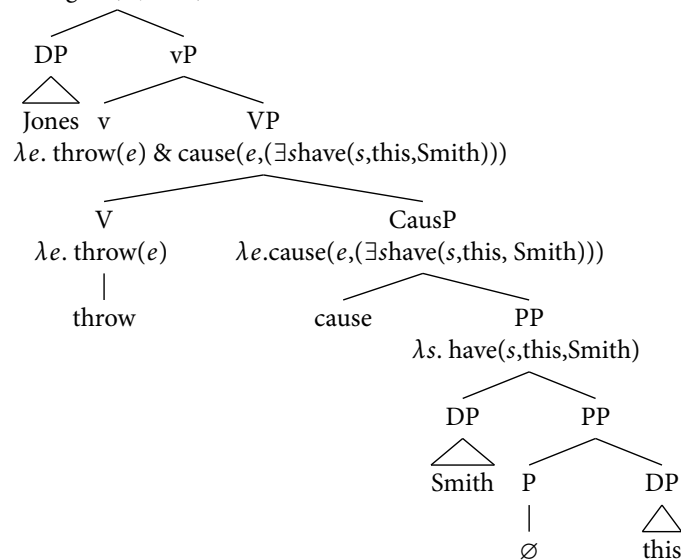
Because *throw* is not a creation verb, it doesn't have built into it a cause component. So we can't import that aspect of Green's paraphrase from the meaning of the host verb. If we don't somehow build it into the head of the small clause we

are positing, then it will have to come from somewhere else. A lexicalist approach would give *throw* another lexical entry. The effect of that would be to turn *throw* into something close to our creation verb. A constructionist approach would posit another component to the phrasal semantics, one that gives to the VPs containing the double object frame the cause meaning. I will express this here with a silent morpheme, "cause".
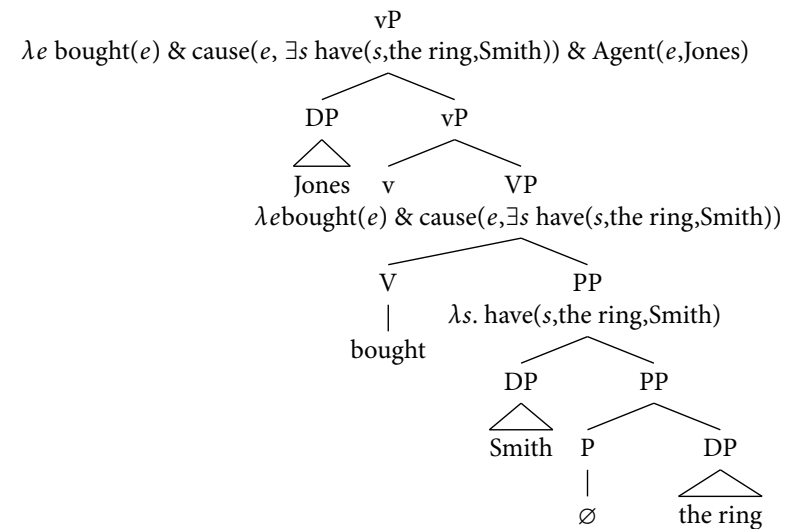
(45)   Jones threw Smith this.

a.   ⟦cause⟧ = $\lambda p\ \lambda e$ cause(e,p)

b.
$$vP$$
$$\lambda e.\ \text{throw}(e)\ \&\ \text{cause}(e, \exists s\ \text{have}(s, \text{this}, \text{Smith}))$$
$$\&\ \text{Agent}(e, \text{Jones})$$

DP   vP

Jones   v   VP
$\lambda e.$ throw(e) & cause$(e,(\exists s$have$(s,$this,Smith$)))$

V   CausP
$\lambda e.$ throw(e) $\lambda e.$cause$(e,(\exists s$have$(s,$this, Smith$)))$

throw   cause   PP
$\lambda s.$ have$(s,$this,Smith$)$

DP   PP

Smith   P   DP

∅   this

The need for an additional "cause" component is present for *for*-examples that don't involve creation verbs.

(46)   Jones bought Smith a ring.

$$vP$$
$$\lambda e\ \text{bought}(e)\ \&\ \text{cause}(e,\ \exists s\ \text{have}(s,\text{the ring},\text{Smith}))\ \&\ \text{Agent}(e,\text{Jones})$$

DP   vP

Jones   v   VP
λebought(e) & cause$(e, \exists s$ have$(s,$the ring,Smith$))$

V   PP
| $\lambda s.$ have$(s,$the ring,Smith$)$
bought

DP   PP

Smith   P   DP

∅   the ring

The first thing to notice about these representations is that the argument structure of the verb never includes the PP. In each case, the verbs are transitive in their PP frame. The *for*-phrase are available, on this view, for any event that can be construed as happening on behalf of something. Similarly, *to*-phrases can be inserted into any VP that describes an event that involves a directed path with a location at its terminus. There is no direct connection between the argument structure of the verb and the PP in these examples. The connection between verb and PP comes entirely through the kinds of events involved. If that is correct, it means we cannot think of the alternation as one that converts a DP+PP frame into a DP+DP frame. Instead, it relates certain transitive verbs to the double object frame.

The second thing to notice is that in the representations for the double object construction, the non-creation verbs are intransitive. That is, they are no longer combining with a DP object in the way that they were in the DP+PP frame. A sentence like (47), for instance, doesn't have a meaning paraphrased by Green's (47a), but rather the one paraphrased by (47b).

(47)   Smith sent Jones the book.

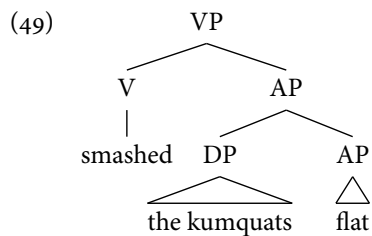a.   Smith caused Jones to have the book by sending it.

b.   Smith caused Jones to have the book by sending.

We lose in these representations the fact that it is the second object that undergoes the action denoted by the verb.
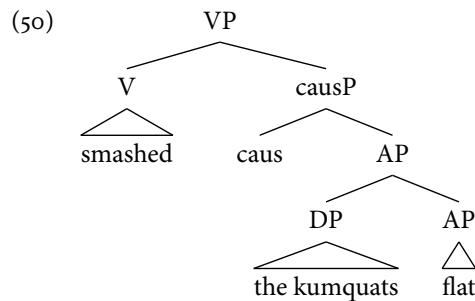
There is a similar problem found in resultatives, and a solution to that problem that we might want to exploit here. Consider (48).

(48) Jones smashed the kumquats flat.

Hoekstra (1988) argues that these have a structure like (49).

(49)

```
              VP
            /    \
           V      AP
           |     /  \
       smashed  DP   AP
               / \    △
          the kumquats  flat
```

This analysis, like ours, loses the fact that we feel *the kumquats* are hammered. Kratzer (2005) suggests a solution which would easily port to our cases. First, she suggests that there is a cause predicate relating the verb to the AP:

(50)

```
              VP
            /    \
           V      causP
          △      /    \
      smashed  caus    AP
                      /   \
                    DP     AP
                   / \      △
              the kumquats  flat
```

What "caus" will do here is is say that the smashing event results in the state of the kumquats being flat. Now, we have to know something about the events that are being described by the predicates that make up a vP. These events are "minimal."

(51) An event, *e*, is a <u>minimal</u> P-event if it contains just what's needed to make P(*e*) true and nothing more.

(See Angelika's Stanford Encyclopedia of Philosophy entry on situations for a (relatively) easy explication and some references.) To get a flavor for why this is needed, consider (52).

(52) Angelika ran for an hour.

run describes a running event, and *for an hour* tells us its duration. We want the event that is referred to by *run* to include just exactly that stuff – its location(s), its participant, its properties – that lasted an hour. We don't want to include Angelika's pre-race warm-up or her stretching afterwards. (That would be included in *Kyle ran for an hour*, of course, but that's the difference between Angelika and I.)

Okay, so the smashing event described by (48) is minimal in this sense. Now the solution to the problem posed by (50) involves a suggestion in Chierchia (2004) that "caus" be defined so that the event and the state that they relate be both part of the same minimal event. This, Angelika notes, will mean that the smashing event can contain *the kumquats* and the state of them being flat, but nothing else. The result is that *the kumquats* is made part of the same minimal event that *smash* describes, and the feeling of objecthood is approximated. Angelika offers (53) as an example suggestive that this is the correct solution.

(53) Jones poured the teapot empty.

Clearly, *the teapot* is not the object of *pour*. But it is still a viable element in the minimal situation that makes *pour the teapot empty* true.
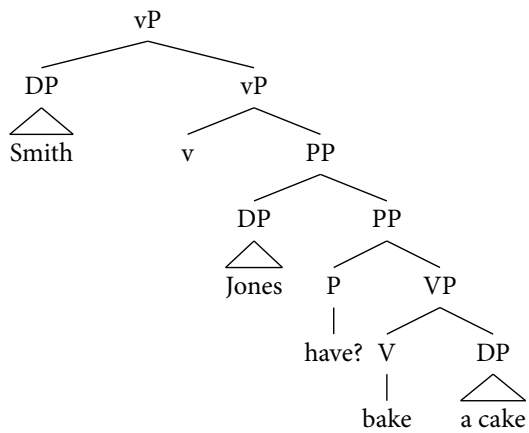
I don't know that this will fail for cases like *kick*, and the other instances of ballistic motion. I think these can all involve intransitive verbs, and the use of "caus" could, perhaps, achieve the desired effect. But I don't believe that, in general, only intransitive verbs can be found in the double object frame.

(54) a. * She bought.
      b. * He sent.
      c. * They gave.

And we can see most clearly, perhaps, in the case of creation verbs that we need the second DP in the double object construction to be the object of the verb.

Perhaps we could adopt Bruening (2010)'s solution.

(55) Smith baked Jones a cake

```
                    vP
           ┌─────────┴─────────┐
          DP                   vP
          ╱╲            ┌───────┴───────┐
        Smith           v               PP
                               ┌────────┴────────┐
                              DP                 PP
                              ╱╲          ┌───────┴───────┐
                            Jones         P               VP
                                          │        ┌───────┴───────┐
                                        have?      V               DP
                                                   │               ╱╲
                                                  bake           a cake
```

But I don't know how to get the semantics out of this.

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