This indeed suggests that every, but not each, can have a collective interpretation. If so, then we can explain the contrast between (44) and (45):

(44) With one stroke of the pen, the pope banned every book on semantics.

(45) With one stroke of the pen, the pope banned each book on semantics.

(44) allows an interpretation where there is one event of banning with the pope as agent, which is with one stroke of the pen, and which has the sum of semantics books as theme. (45) only allows an interpretation with each book on semantics wide scope over with one stroke of the pen. This gives us a banning with a single stroke of the pen for each book on semantics. But that conflicts with the natural interpretation of with one stroke of the pen, hence the oddity of (45).

Consequently, these examples are not problems for the Unique Role Requirement.

3.4. THE ARGUMENT EXTENSION ALTERNATIVE

3.4.1. McConnell-Ginet

Let us now come back to Parsons’ modifier argument.

McConnell-Ginet 1982 assumes a different treatment of adverbials. Roughly, she assumes that adverbs modify the verb by augmenting its argument structure. Here is the idea:

We assume that stab is a two place relation:

\[ \lambda y \lambda x. \text{STAB}^2(x, y) \]

McConnell-Ginet interprets an adverbial like quickly as: ‘at a quick rate’ and she assumes that it involves quantification over rates. When the adverbial is combined with the verb, it adds to the verb a new argument place, in this case a manner argument, and the adverbial specifies the thing that fills this argument place:

\[ \text{quickly stab} \rightarrow \lambda y \lambda x. \exists t [\text{RATE}(r) \land \text{QUICK}(r) \land \text{STAB}^2(x, y, t)] \]

We see that the 2-place relation STAB gets replaced by the 3-place relation STAB. McConnell-Ginet assumes a meaning postulate which states that:

\[ \text{STAB}^2(x, y, t) \text{ entails } \text{STAB}^3(x, y) \]

With this strategy, you do get some of Parsons’ diamond entailments right. Also the entailment upward in the diamond is blocked correctly: if the 3-place STAB relation holds between two individual and a modifier argument and the 3-place STAB relation holds between those same two individuals and another modifier argument, nothing requires that, in virtue of that, the 4-place STAB relation must hold between those two individuals and those two modifier arguments:

\[ \text{STAB}^2(x, y, u) \land \text{STAB}^3(x, y, v) \text{ does not entail } \text{STAB}^4(x, y, z) \]

However, as Parsons’ argues, this theory still doesn’t give you all the right results:

(49a) gets interpreted as (49b):

(49a) a. Brutus stabs Caesar quickly with a knife in the back at midnight.

b. \[ \exists t [\text{RATE}(r) \land \text{QUICK}(r) \land \\
\exists t [\text{TIME}(t) \land \text{MIDNIGHT}(t) \land \\
\exists t [\text{PLACE OF CONTACT}(r) \land \text{IN THE BACK}(t) \land \\
\exists t [\text{INSTRUMENT}(r) \land \text{KNIFE}(t) \land \\
\text{STAB}^4(b, c, r, t, p, t)]]] \]

The problem is in fact the very same problem we discussed before for non-Davidsonian theories of modification, the problem of Permutation: McConnell-Ginet has to guarantee that \( \text{STAB}^2(x, y, r, i, t, l) \) is equivalent to, say, \( \text{STAB}^2(x, y, t, i, l, r) \) and that \( \text{STAB}^2(x, y, r, i, t) \) entails, say, \( \text{STAB}^2(x, y, i, t) \). A whole battery of meaning postulates seem to be needed for this.

3.4.2. Wyner

Wyner 1989a presents a solution to this problem. I will first give a simplified version of Wyner’s solution and then discuss his actual proposal.

Let’s assume that the modifier arguments that are added to the verb are not added as part of an ordered tuple, but are added as part of an unordered set: a modification set. This will give us the permutation facts for free.

The idea is as follows:
- assume that verbs have a modification set.

\[ \lambda y \lambda x. \text{STAB}(x, y, \emptyset) \]

- Adding an adverb like quickly, goes like McConnell-Ginet’s proposal, except that the modification set is extended as follows:

\[ \text{quickly stab} \rightarrow \lambda y \lambda x. \exists t [\text{RATE}(r) \land \text{QUICK}(r) \land \text{STAB}(x, y, \{r\})] \]
Modifiers-arguments are generally added to the modification set, so (49a) becomes (49c):

\[(49)\ c. \ \exists t[RATE(t) \land QUICK(t)] \land
\exists t[TIME(t) \land MIDNIGHT(t)] \land
\exists [PLACE OF CONTACT(t) \land IN THE BACK(t)] \land
\exists [INSTRUMENT(t) \land KNIFE(t)] \land
STAB(b,c,(r,t,p,i))]]\]

This approach is based on the same idea concerning adverbials as McConnell-Ginet's approach - adverbials 'add' to verbs - but Wyner's proposal has several advantages. In the first place, McConnell-Ginet needs to assume that stab is highly ambiguous, i.e. she needs a class of interpretations STAB\(^2\), STAB\(^3\), ..., of different arity. Wyner can assume that STAB is just a three place relation, where the third place is a set. Secondly, since the modifiers are added to a set, all the permutation facts follow directly. Thirdly, the argument drop facts can be gotten with a general simple meaning postulate:

If STAB(x,y,X) and \(Y \subseteq X\) then STAB(x,y,Y)

A problem is added, however. In an ordered argument approach, you do not have to explicitly specify which argument plays which role, because you can assume that that is determined by its place in the n-tuple. However, when you add a permutation principle, or you put the arguments into a set - and that is, of course what accounts for the permutation facts - it is no longer determined which role the arguments play.

The problem shows up in the following case.

\[(50)\ a. \ Brutus stabbed Caesar with the knife for which he sold his toga to Pompeia.\
\[b. \ \exists x[KNIFE(x) \land INSTRUMENT(x) \land STAB(b,c,(x)) \land
PURPOSE(x) \land SELL(b,t,p,(x))]]\]

If we assume that (50a) gets interpreted as (50b), we get the following problem: in (50b) the same object, the knife, gets added to the modification set of STAB and to the modification set of SELL. But it is not indicated in (50b), what the knife is the Instrument of and what it is the Purpose of. This means that we can do argument swapping, and (50a) is predicted to be equivalent to (51a):

\[(51)\ a. \ Brutus stabbed Caesar for the knife with which he sold his toga to Pompeia.\
\[b. \ \exists x[KNIFE(x) \land INSTRUMENT(x) \land STAB(b,c,(x)) \land
PURPOSE(x) \land SELL(b,t,p,(x))]]\]

It seems, then, that for this proposal to work, we will have to tie the roles to the verbs that they modify. For the case at hand it would be sufficient to index the roles with the verb that they modify. This would give interpretation (50c) for (50a), which is not equivalent to interpretation (51b) of (51a):

\[(50)\ c. \ \exists x[KNIFE(x) \land INSTRUMENT_{mbh}(x) \land STAB(b,c,(x)) \land
PURPOSE_{mbh}(x) \land SELL(b,t,p,(x))]]\]

\[(51)\ b. \ \exists x[KNIFE(x) \land INSTRUMENT_{sell}(x) \land STAB(b,c,(x)) \land
PURPOSE_{sell}(x) \land SELL(b,t,p,(x))]]\]

This is, of course, a variant of the finegrained role analysis that we discussed in lecture Two. And it fails for the same reason: when the verbs are the same, we can still do the argument swapping. Let us assume that Brutus stabbed Pompeia in order to acquire his knife, and with that very knife, he stabbed Caesar. In this situation (52a) is true, but (52b) is not. But the finegrained role analysis predicts that (52a) and (52b) are equivalent, since both are interpreted as (52c):

\[(52)\ a. \ Brutus stabbed Caesar with the knife for which he stabbed Pompeia.\
\[b. \ Brutus stabbed Caesar for the knife with which he stabbed Pompeia.\
\[c. \ \exists x[KNIFE(x) \land INSTRUMENT_{mbh}(x) \land STAB(b,c,(x)) \land
PURPOSE_{mbh}(x) \land SELL(b,t,p,(x))]]\]

Now, the above proposal is in fact not Wyner's actual proposal. In the above proposal, I have assumed that the adverbial adds conjunctively a role, and adds the argument of that role to the modification set of the verb. What Wyner actually assumes is that the adverbial introduces a role which is added to the modification set, and the argument specification is added conjunctively:

\[stab with a knife \rightarrow
\lambda y x. \exists t[STAB(x,y,(t)) \land \exists x[KNIFE(x) \land WITH(r,x)]]\]

Variable \(r\) is a variable over roles here. So with a knife adds a role to the modification set of STAB, which stands in the WITH relation to a knife. This analysis does not get into the above problems. (52a) is analyzed as (52d) and (52b) as (52e):

\[(52)\ a. \ Brutus stabbed Caesar with the knife which he stabbed Pompeia.\
\[b. \ Brutus stabbed Caesar for the knife with which he stabbed Pompeia.\
\[c. \ \exists x[KNIFE(x) \land \exists t[STAB(b,c,(t)) \land INSTRUMENT(s,x)] \land
\exists t[STAB(b,c,(t)) \land PURPOSE(r,x)]]]\]

(52d) says that there is a knife and an instrument role for which that knife is specified and the STAB relation holds between Brutus, Caesar and that instrument role, and there is a purpose role for which that knife is also specified and the STAB relation holds between Brutus, Pompeia and that purpose role. And this is not equivalent to (52e).
But what are these roles that get added to the modification set? Look once again at Parsons' argument swap example in (53a), and Wyner's interpretation in (53b):

(53) a. Brutus stabbed Caesar with a knife in the back and Brutus stabbed Caesar with an ice pick in the front.
   b. $\exists x[\text{KNIFE}(x) \land \exists y(z) \exists z(\text{STAB}(b,c,(r,p)) \land \text{INSTRUMENT}(t,x) \land \text{IN}(p,\text{THE BACK})]) \land \exists z(\text{ICE PICK}(z) \land \exists y(z) \exists z(\text{STAB}(b,c,\{s,q\}) \land \text{INSTRUMENT}(s,z) \land \text{IN}(q,\text{THE FRONT}))]

Both $r$ and $s$ in (53b) are variables over instrument roles. Could they be instantiated by the same instrument role? No, because then we get the problems of argument swapping back. Thus, we are forced to assume that the instrument role in the back stabbing and the instrument role in the front stabbing are distinct.

But what are these instrument roles? They are not roles themselves, but instantiations of roles. When we assume that the two modification sets in (53b) contain different instrument roles, say, $i_1$ and $i_2$, we are talking about different instantiations of the role of instrument. In what way are they different? Well, obviously $i_1$ and $i_2$ are different because they are the instantiations of the role of instrument on different stabblings. And clearly, the fineness arguments tell us that we need as many different instantiations of the role of instrument as there are stabblings. But that means that Wyner's theory only superficially avoids the implicit event argument of the Davidsonian analysis, and is, on closer inspection, a variant of the Davidsonian analysis.

3.4.3. THE NEO-McCONNELL-GINETIAN THEORY

I will give another analysis here, based on McConnell-Ginet's idea of argument extension and Wyner's idea of modification sets that is not, in the above sense a variant of the Davidsonian theory. While I developed the analysis discussed here, so to say, to fill a gap in the full gamut of possibilities, and for comparison purposes, it turned out, as happens so often, that there actually wasn't a gap: the basics of the alternative had already been developed in Graves 1990 (thanks to Adam Wyner for drawing my attention to this).

The idea is the following. McConnell-Ginet assumes that the extension of a verb with $n$ arguments and modified by $m$ modifiers is a set of $m+n$ tuples. The elements in those tuples are basically the values for the argument roles and the modifier roles. There are two things we need to achieve simultaneously: we have to undo the ordering that the $m+n$ tuples impose, in order to get permutation, and we have to tie the values in the tuples to the roles, to avoid swap. As we have seen, these two are difficult to achieve simultaneously. The reason is that the order in the tuples is typically used to encode the tie with the roles: we can avoid swap if we declare, say, that the first argument in the tuple is the agent, the second the theme, the third the instrument, etc. But if we get rid of the order in the tuples of role-values, we lose this encoding, and hence we lose the connection with the roles.

Clearly, then, if we can't use the order in the tuples in the verb denotation to encode which role each argument plays, we need some other way of encoding that. And the obvious way to do that, which we haven't explored yet, is to mark on the arguments of the verb which role they play. Thus, instead of assuming that a verb denotation is, say, a set of triples $\langle a,b,c \rangle$ where $a$ is the agent, $b$ the theme and $c$ the instrument of the verb, we should assume that the verb denotation is a set of triples $\langle \langle Ag_1 \rangle, \langle Th_2 \rangle, \langle In_3 \rangle \rangle$ of role-value pairs. But once we mark each argument for the role that it plays, we no longer need the ordering: instead of assuming that the verb denotation is a set of triples of role-value pairs, we can assume that the verb denotation is a set of unordered sets of role value pairs $\langle \langle Ag_1 \rangle, \langle Th_2 \rangle, \langle In_3 \rangle \rangle$: since the roles are already marked on the values, we no longer need to encode them in the ordering.

If verbs denote sets of sets of role-value pairs, we get the permutation facts for free (because these sets are not ordered), and we keep the connection between the arguments of the verbs and the roles. Then we only need to impose a straightforward Drop principle to get the full diamond entailment facts. We will make this precise now.

We take Montague's type theory (based on types $d$ and $t$) and we add the following things to it:

1. We add a basic type $r$, the type of roles. We add as constants of this type: $Ag, Th,...$
2. We take roles as primitives.
3. We add a product-type $rxd$, and the following syntactic rule:
   - $\alpha \beta$ is of type $r$ and $\beta$ of type $d$, then $\langle \alpha, \beta \rangle$ is of type $rxd$.
   This allows us to form, in the logical language, expressions of the form $\langle Ag,t \rangle$ (denoting $\langle Ag, t(j) \rangle$).
3. We add type $pow(rxd)$, the type of sets of such pairs, and the following rules:
   - if $\alpha_1...\alpha_n$ are expressions of type $rxd$, then $\{\alpha_1,...,\alpha_n\}$ is an expression of type $pow(rxd)$.
   - if $\beta_1$ and $\beta_2$ are expressions of type $pow(rxd)$, then $\beta_1 \cup \beta_2$ is an expression of type $pow(rxd)$.
   - $\emptyset$ is an expression of type $pow(rxd)$

Further, we associate with each verb, $walk$, $stab$, a constant $WALK$, $STAB$ of type $\langle pow(rxd), p \rangle$. So WALK and STAB denote functions from sets of role-individual pairs into truth values (i.e., verbs indeed denote sets of sets of role-individual pairs).

We adopt the Unique Role Requirement through a meaning postulate on these constants (I will assume for clarity here, without working this out precisely, that we allow underdetermined in the theory):

Unique Role Requirement:

$[\alpha'](X)$ is only defined (1 or 0) if $X$ is a partial function from $r$ into $d$. 
This means that STAB can only be true or false of a set of roles-individual pairs if that set contains for each role R at most one pair <R,d>. Hence, at most one agent, at most one theme, etc. can be specified.

We can assume further that certain roles can be obligatory: we do that by stipulating that [α′](X) is only defined if X contains pairs of a certain nature. (For instance, we can require that [STAB](X) is only defined if X contains a pair of the form <Ag,d>.)

Finally, we assume an argument drop postulate:

**Argument Drop:**

If [α′](X)=1 and Y ⊆ X and [α′'](Y) is defined then [α′'](Y)=1

In other words: suppose STAB is true of a set of roles. Look at a subset of roles, for which STAB is defined, i.e. a subset which satisfies the Unique Role Requirement and contains whatever role is obligatory for STAB: STAB is true of that subset as well.

With this we can build the grammar. We will assume that transitive and intransitive verbs are of the types <d,<d,<pow(rxd),t>>,d> and <d,<pow(rxd),t>>, respectively, and we give the following interpretations:

\[ stab \rightarrow \lambda y \lambda x M.STAB(M \cup \{<Ag,x>,<Th,y>\}) \]

\[ walk \rightarrow \lambda x M.WALK(M \cup \{<Ag,x>\}) \]

Thus a one-place verb *walk* denotes a relation between individuals and sets of role-value pairs: the relation that holds between an individual x and a set of role-value pairs M iff the set of role-value pairs in M, extended with the pair <Ag,x> (i.e. united with the set \{<Ag,x>\}) is in the denotation of *walk*.

We see then, that in this theory too, verb interpretations have an implicit argument, but it doesn’t range over events, but over sets of role-argument pairs. The theory is quite different from the Davidsonian theory, because such sets of role-argument pairs cannot be regarded as Davidsonian events. We have argued that Davidsonian events need to be very finegrained: if an event is a stabbing, it is inherently tied to the meaning of the verb *stab*, and not to other verb meanings. But a set of role-argument pairs is just a set of role-argument pairs: if the set \{<Ag,a>,<Th,b>,<In,c>\} happens to be in the denotation of *stab*, nothing precludes it from being in the denotation of another, completely unrelated verb, say, *kiss*, as well. That would just mean that a,b and c stand as respectively agent, theme, and instrument both in the stab-relation, and in the kiss relation. Thus, sets of role-argument pairs are very coarse grained.

Let’s take the interpretation for the transitive verb *stab* and add the object argument Caesar and the subject Brutus.

We get:

\[ Brutus stabs Caesar \rightarrow \lambda M.STAB(M \cup \{<Ag,b>,<Th,c>\}) \]

The function which takes a set of role-argument pairs into truth value 1 iff that set, augmented with the pairs <Ag,b> and <Th,c>, is in the denotation of *stab*.

We assume a default rule of *modification set closure*, which is the analogue of Existential Closure over the event argument:

\[ SETCLOSURE: <pow(rxd),t> \rightarrow t \]

\[ SETCLOSURE[0] = \emptyset(\emptyset) \]

This gives as a final representation:

\[ Brutus stabs Caesar \rightarrow STAB(\{<Ag,b>,<Th,c>\}) \]

Thus, *Brutus stabs Caesar* is true iff the set \{<Ag,b>,<Th,c>\} is in the denotation of *stab*.

Modifiers modify the modification set argument before modification set closure. We follow here McConnell-Ginet’s intuition that modifiers add to the argument structure of the verb. In the current framework, that means that they augment the modification set of the verb:

\[ with\ a\ knife \rightarrow \lambda V \lambda y \lambda x \lambda M.\exists z \in KNIFE: V(M \cup \{<In,z>,x,y>\}) \]

\[ at\ midnight \rightarrow \lambda V \lambda y \lambda x \lambda M.\exists t \in MIDNIGHT: V(M \cup \{<T,t>,x,y>\}) \]

A prepositional phrase like *with a knife* augments the modification set of the verb with an instrument-value pair, with the knife as the value.

\[ stab \rightarrow \lambda V \lambda x \lambda a. STAB(N \cup \{<Ag,a>,<Th,v>\}) \]
stab with a knife →  
\( \lambda x \lambda y \lambda M. \exists z \in KNIFE: V(M \cup \{<In, z>, x, y\}) \)
\( u \in N. STAB(N \cup \{<Ag, u>, <Th, v>\})) \)

\( = \lambda y \lambda x \lambda M. \exists z \in KNIFE: \) 
\( [\lambda x \lambda y \lambda M. \exists z \in KNIFE: STAB(N \cup \{<Ag, u>, <Th, v>\}))](M \cup \{<In, z>, x, y\}) \)

\( = \lambda y \lambda x \lambda M. \exists z \in KNIFE: STAB((M \cup \{<In, z>\}) \cup \{<Ag, x>, <Th, y>\})) \)

\( = \lambda y \lambda x \lambda M. \exists z \in KNIFE: STAB(M \cup \{<Ag, x>, <Th, y>, <In, z>\}) \)

So we get:

\( \begin{align*} 
\text{stab with a knife} & \rightarrow \\
\lambda y \lambda x \lambda M. \exists z \in KNIFE: STAB(M \cup \{<Ag, x>, <Th, y>, <In, z>\}) 
\end{align*} \)

Similarly,

\( \begin{align*} 
\text{stab with a knife at midnight} & \rightarrow \\
\lambda y \lambda x \lambda M. \exists z \in KNIFE(x): \exists t \subseteq \text{MIDNIGHT}: \\
& \quad STAB(M \cup \{<Ag, x>, <Th, y>, <In, z>, <Ti, t>\}) 
\end{align*} \)

After filling in the arguments and modifier closure, we get:

\( \begin{align*} 
(54) \ a. & \text{ Brutus stabbed Caesar with a knife at midnight.} \\
b. & \exists z \in KNIFE: \exists t \subseteq \text{MIDNIGHT}: STAB(\{<Ag, b>, <Th, c>, <In, z>, <Ti, t>\}) 
\end{align*} \)

There is a knife and a time part of midnight such that the set of role argument pairs which makes Brutus an agent, Caesar a theme, that knife an instrument, and that time a running time in the extension of \( \text{stab} \).

This analysis will satisfy all the right diamond entailments: Permutation and the argument drop entailments hold: Permutation holds because STAB applies to unordered sets of role-argument pairs; Argument Drop holds, because we explicitly imposed this condition. The entailments up in the diamond do not hold:

\( \begin{align*} 
\text{STAB}(\{<Ag, b>, <Th, c>, <In, z>\}) \land \text{STAB}(\{<Ag, b>, <Th, c>, <T, t>\}) 
\end{align*} \)

does not entail:

\( \begin{align*} 
\text{STAB}(\{<Ag, b>, <Th, c>, <In, z>, <T, t>\}) 
\end{align*} \)

Similarly, the earlier mentioned argument-swap doesn’t hold:

\( \begin{align*} 
\text{STAB}(\{<Ag, b>, <Th, c>, <In, z>, <Pl, Back>\}) \land \\
\text{STAB}(\{<Ag, b>, <Th, c>, <In, u>, <Pl, Front>\}) 
\end{align*} \)

does not entail, say,

\( \begin{align*} 
\text{STAB}(\{<Ag, b>, <Th, c>, <In, z>, <Pl, Front>\}) 
\end{align*} \)

The reason is, of course, that the arguments are tied as values to the roles in the extension of the verb. STAB is true of sets of role-argument pairs. The only thing we have imposed so that if STAB is true of a set of role-argument pairs, it will be true of appropriate subsets as well. But, of course, we haven’t imposed that if STAB is true of two sets of role-argument pairs, it is true of, say, the union of those sets, or of sets with role-argument pairs interchanged. In fact, the theory works, precisely because we’re not tempted to impose such constraints. For the same reason, we have no problems with (52): (52a) and (52b) are interpreted as (52f) and (52g) respectively, and these are not equivalent:

\( \begin{align*} 
(52) \ a. & \text{ Brutus stabbed Caesar with the knife for which he stabbed Pompæius.} \\
f. & \exists z \in KNIFE: \text{STAB}(\{<Ag, b>, <Th, c>, <In, z>\}) \land \\
& \text{STAB}(\{<Ag, b>, <Th, p>, <Pu, z>\}) \\
b. & \text{ Brutus stabbed Caesar for the knife with which he stabbed Pompæius.} \\
g. & \exists z \in KNIFE: \text{STAB}(\{<Ag, b>, <Th, c>, <Pu, u>\}) \land \\
& \text{STAB}(\{<Ag, b>, <Th, p>, <In, u>\}) 
\end{align*} \)

We have now developed a theory that can do the same as Parsons’ neo-Davidsonian theory does, but doesn’t have the event argument.

While the theory is not Davidsonian, it is distinctly neo-McConnell-Ginetian. Like Parsons’ neo-Davidsonian theory, the neo-McConnell-Ginetian theory relies on thematic roles to tie the arguments to the verb. The point of the argument swap examples (in the context of the permutation facts) is that it is not enough to let the verb have access to the values of the roles only, it needs to access those values through the roles, and hence the roles play an essential role in the theory. In Parsons’ theory, the verb accesses the arguments of the roles through the event argument: the verb accesses the event argument, the event argument accesses the roles, the roles access the arguments. In the neo-McConnell-Ginetian theory, we do without the event argument by letting the verb directly access role-argument pairs.

The neo-McConnell-Ginetian theory, hence, incorporates thematic roles and the Unique Role Requirement. In both theories, adding the interpretation of a role expression, like a modifier, to a verb interpretation adds a role to the interpretation, and it does this by operating on the implicit argument of the verb. The only real difference
between the theories is that, while in the neo-Davidsonian theory such roles are added externally to the verb interpretation, through intersection on the event argument, in the neo-McConnell-Ginetian theory the roles are added internally to the verb interpretation, through union on the modification set argument.

I have argued in these lectures up to now, that all the good arguments for the (neo)-Davidsonian theory either reduce to the Modifier argument, or are arguments for the Unique Role Requirement. Since the neo-McConnell-Ginetian theory can deal successfully with the Modifier argument, and includes the Unique Role Requirement, none of the arguments presented are arguments against the neo-McConnell-Ginetian theory.

Note, for instance, that while the neo-McConnell-Ginetian theory does not assume implicit event arguments, it is not incompatible with there being explicit event arguments. For instance, we could represent the modifier once as follows:

\[ \text{once} \rightarrow \lambda \nu \lambda \lambda_{x,y} M. \exists ! e [V(M \cup \{<\text{INSTANCE}, e>\}, x, y)] \]

For that matter, we can represent the Davidsonian theory easily in this framework: we would just assume that the event-instantiation role is an obligatory role (for action verbs). We can also represent the Davidsonian theory indirectly, by adopting a meaning postulate:

\[ \alpha(X) \text{ iff } \exists e [\alpha(X) \cup \{<\text{INSTANCE}, e>\}] \]

I have ultimately two reasons for preferring the neo-Davidsonian theory over the neo-McConnell-Ginetian one.

In the first place, one thing that the neo-McConnell-Ginetian theory, in its present incarnation, does not fully capture is the parallel between adjectives and adverbials. In the neo-Davidsonian theory, the mechanisms that produce the diamond facts for adjectives and for adverbials are the same and completely general: the facts follow from our interpretation of modification as the operation of intersection on an argument of the predicate. Hence, the neo-Davidsonian theory has a unified account for the diamond facts. The neo-McConnell-Ginetian theory doesn’t have such a unified explanation: adjectival modification is indeed internal intersection on an argument of the predicate, but adverbial modification is internal union on a set modification argument. Not only that, but the neo-McConnell-Ginetian theory needs to explicitly impose a principle of argument Drop for adverbials, where the neo-Davidsonian theory gets that for free from intersection.

Even if the theories are observationally equivalent, it still seems to me that the neo-McConnell-Ginetian theory misses an important generalization, which is captured in the neo-Davidsonian theory. The neo-Davidsonian theory allows for a very general theory of modification structures. It allows us to assume that all modification structures fall into two classes: those where the adjunct is a scopal operator (this class includes modal adjectives, but also modal auxiliaries), and those where the modifier isn’t a scopal operator. It allows for a very general semantics for these two classes:

- modifiers which are scopal operators semantically apply to their head predicate.
- modifiers which are not scopal operators semantically intersect with their head predicate.

Thus, the neo-Davidsonian theory can explain the parallels between modification in the nominal domain (adjectives, relative clauses, etc.) and modification in the verbal domain, by assuming that the very same general semantic operations apply in both domains. Landman ms.a analyzes various other cases, where, through the event argument, a neo-Davidsonian theory can explain other strong parallels between the verbal domain and the nominal domain in a very general way.

One such argument - and this is really my second reason for preferring the neo-Davidsonian theory - will be the topic of the remainder of these lectures. I will argue that, while the operation of semantic plurality is visible on nouns in the morphology, there is good reason to assume that the very same semantic operation applies in the verbal domain as well, to the Davidsonian event argument and its neo-Davidsonian roles. I will argue that in this way, the phenomena of distributivity and cumulativity can both be reduced to semantic plurality.

While I have no doubt that the theory that I will develop can be reconstructed in the neo-McConnell-Ginetian theory, I think that the neo-Davidsonian theory - with the event argument and the conjunctive roles - is particularly suited for developing a general theory of the plurality phenomena that will occupy us for the remainder of these lectures: the reduction of distributivity and cumulativity to semantic plurality; scopal and scopeless readings of plural noun phrases; and maximalization effects for non-upward entailing plural noun phrases.