

Internal and External Readings of *Same*: Evidence for a Uniform Account¹

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Abstract. *Same* is an anaphoric element that performs a comparison, which can either be external or internal to a sentence. Hardt and Mikkelsen (2015) show that *same*, unlike other anaphoric expressions, imposes a parallelism constraint, and they present three types of examples showing that *same* is infelicitous in the absence of parallelism. Hardt and Mikkelsen propose an account that applies uniformly to internal and external readings; however, the evidence they present largely targets external readings – they don't offer empirical evidence that clearly supports the uniform approach. Furthermore, Barker (2007) argues that internal readings must be treated differently than external readings. In this paper, I show that the parallelism effects observed by Hardt and Mikkelsen in fact apply to internal readings as well. This provides support for a uniform treatment of internal and external readings of *same*. It also suggests that discourse relations, which typically apply to separate overt predications, also apply to the implicit predications that arise in distributional structures.

Keywords: same, anaphora, parallelism

1. Introduction

Same performs a comparison, which can either be external, as in (1), or internal, as in (2).

- (1) John read *War and Peace*. Tom read the same book.
- (2) Every boy read the same book.

In (1), the definite *the same book* must be identified with the antecedent NP, *War and Peace*. It would appear to impose a semantic identity condition on an antecedent expression in surrounding discourse. In this way *same* is like pronouns, definites, and ellipsis, all of which require identity with an antecedent. In (2), the internal reading is licensed, or controlled, by a quantified NP, *every boy*. Since Carlson (1987), it has been recognized that the controller need not be a NP, but can be a variety of syntactic categories. Barker (2007) captures this diversity of controllers with an account that only applies to internal readings. Hardt and Mikkelsen (2015), on the other hand, argue for treating internal and external readings in a uniform way, and they argue furthermore that *same* gives rise to a discourse parallelism requirement. They give three types of observations in support of this theory. But all three of these observations concern external readings, and not internal readings. Thus they don't provide concrete empirical support for their proposal that internal and external readings receive the same treatment.

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In this paper, I present new arguments in favor of a uniform account of external and internal readings of *same*: I show that all three of Hardt and Mikkelsen’s observations, distinct antecedent, parallel antecedent, and negated antecedent, apply to internal readings as well as external readings.

2. Background

2.1. Internal Readings

As pointed out by Carlson (1987), *same* can give rise to internal readings. He points out that this requires a distributive element, a quantifier or coordination. We term this element the controller (shown in **bold**). So in (3), the controller is the QP *Every boy*, while in (4) it is the conjoined NP *John and Sam*. As (5) and (6) illustrate, the controller need not be a nominal category – here we observe a conjoined V and a conjoined PP.

- (3) **Every boy** read the same book.
- (4) **John and Sam** read the same book.
- (5) Sam **praised and criticized** the same book.
- (6) Sam assigned the same book **in March and in April**

As Carlson puts it, in the internal reading, the sentence “provides its own context” for the interpretation of *same*. Any conjoined constituent can function as controller, it would appear, as long as it is interpreted distributively. Heim (1985) also acknowledges the diversity of potential controllers. This is dealt with explicitly by Barker (2007)[p. 25], who introduces a structural postulate which makes it possible to λ abstract over any distinguished element. In what follows, I will simply assume that a controller can be any syntactic object that can participate in coordination.

2.2. External Readings

While internal readings “provide their own context”, one can observe analogous readings for *same* where surrounding discourse provides the context, as in (7), which is directly analogous to (4) above.

- (7) **John** read *War and Peace*. **Sam** read the same book.

We can think of *John* and *Sam* as controllers in (7). Note that, just like internal readings, external readings exhibit a diversity of controllers – verbs in (8) and prepositional phrases in (9).

(8) John **praised** *War and Peace*. Then he **criticized** the same book.

(9) John assigned *War and Peace* **in March**. He assigned the same book **in April**.

Much previous literature (Brasoveanu (2011); Heim (1985)) emphasizes the evident analogy between internal and external readings. But Barker (2007) argues that his proposed account should only apply to internal readings, and while Hardt and Mikkelsen (2015) follow most previous literature in seeking a uniform account, their empirical arguments, based on parallelism, don't seem to naturally apply to internal readings. Thus, the question of a uniform treatment of internal and external readings is left rather open. In what follows, I will show that Hardt and Mikkelsen's parallelism arguments can also be made with respect to internal readings. The key to doing this is to look at examples where the controllers are verbal rather than nominal categories.

3. Hardt and Mikkelsen's Proposal

Hardt and Mikkelsen take as their starting point a double indexing approach for *same*, as proposed by Brasoveanu (2011). This is a natural reflection of the fact that *same* compares two expressions: a local containing expression and its antecedent.

3.1. Brasoveanu's Account

I illustrate the account of Brasoveanu (2011) with respect to (10).

(10) Every^{*u*₀} boy read the^{*u*₁} same^{*u*₁} book.

Intuitively, the interpretation is this:

(11) for every pair of boys b_1 and b_2 and pair of books k_1 and k_2 such that b_1 read k_1 and b_2 read k_2 , $k_1 = k_2$

To capture this, Brasoveanu defines a distribution operator that distributes over pairs of individuals, and then gives *same* and *different* the ability to access such pairs. Brasoveanu gives the following meaning for *same*:

(12) $\text{same}_{u_n}^m \rightsquigarrow \lambda P_{et} . \lambda v_e . P(v); * (P(u_{n+m}); [\text{identical}\{u_{n+m}, u_n\}])$

On Brasoveanu’s account *same* compares a containing NP with an antecedent NP. The challenge for internal readings is that there is no explicit antecedent for *same*. To address this, Brasoveanu posits a distribution operator which allows comparison of individuals within the domain of quantification.

To understand how this works, consider the drs for (10):

$$(13) \quad \mathbf{max}^{u_0}([\mathbf{atoms-only}\{u_0\}, \mathit{boy}\{u_0\}]); \\ \mathbf{dist}_{u_0}([u_1 | \mathbf{atoms-only}\{u_1\}], \mathbf{singleton}\{u_1\}, \mathit{book}\{u_1\}; \\ *(\underline{\mathit{book}(u_{1+2})}; [\mathbf{identical}\{u_{1+2}, u_1\}]); [\mathit{read}\{u_0, u_1\}]))$$

The contribution of *every boy* is the maximal set of boys, while the *dist* operator tests each element of that set to see that it satisfies the nuclear scope. In doing this *dist* in fact examines all pairs of elements, call them *boy*₁ and *boy*₂, and checks each element to see that it satisfies the nuclear scope, which itself involves an update, namely a book associated with each boy – these boy-book pairs are termed *stacks*. In this example each stack has length 2; in general they can be of any length. Thus *dist* checks every pair of stacks, *s*₁ and *s*₂, to ensure that both *s*₁ and *s*₂ satisfy the nuclear scope. These expressions make use of the stack-concatenation operator, *, which examines its two input stacks, and concatenates them. The concatenated stack can then be used to compare two analogous individuals, using the offset, which is the length of the input stacks.

$$\begin{array}{|c|c|} \hline u_0 & u_1 \\ \hline \text{boy1} & \text{book1} \\ \hline \end{array} * \begin{array}{|c|c|} \hline u_0 & u_1 \\ \hline \text{boy2} & \text{book2} \\ \hline \end{array} = \begin{array}{|c|c|c|c|} \hline u_0 & u_1 & u_2 & u_3 \\ \hline \text{boy1} & \text{book1} & \text{boy2} & \text{book2} \\ \hline \end{array}$$

The resulting stack makes available two discourse referents, *u*₁ and *u*₃; in the drs above, the **identical** condition is placed on these two discourse references, as desired. The distribution operator ensures that all possible pairs of stacks will be compared, which in this case means that all pairs of boys read the identical book.

Hardt and Mikkelsen take issue with Brasoveanu, in that they claim that *same* is different, in that it indexes eventualities, unlike *different* and other anaphoric expressions.

3.2. Parallelism

The main claim of Hardt and Mikkelsen (2015) is that *same* requires parallelism. More specifically, the clause containing *same* and the antecedent clause must be related by Parallel, as defined here, following Kehler (2002):

- (14) Parallel: Infer $P(a_1, a_2, \dots)$ from the assertion of $S1$ and $P(b_1, b_2, \dots)$ from the assertion of $S2$, for a (non-trivial) common P and similar a_i and b_i .

Parallel requires a common relation P that subsumes the relation of both $S1$ and $S2$, as well as similar parallel elements. To satisfy Parallel, two eventualities must contain similar predicates applied to similar arguments. Two predicates count as similar if they both entail a non-trivial common relation. The arguments are similar to the extent that similar predicates apply to them. An intuitive way of computing this can be found in accounts such as Asher (1993) and Prüst et al. (1994), where parallelism is thought of as a kind of most specific unifier, which captures the semantic commonality between the two eventualities.

3.3. Semantic Representation

Hardt and Mikkelsen (2015) follow Brasoveanu in giving a uniform treatment of *same* in this way, whether it appears with internal or external readings. However, recall that Hardt and Mikkelsen define *same* somewhat differently, so that, on their account, a Parallel condition is placed on the containing and antecedent eventualities.

The meaning for *same* for Hardt and Mikkelsen builds on that given in Brasoveanu (2011), with two key modifications: first, *same* compares eventualities rather than individuals. Second, the comparison is the discourse condition Parallel, rather than a simple identity.

This is the meaning for *same* proposed by Hardt and Mikkelsen (2015):

$$\text{same}_{e_n}^m \rightsquigarrow \lambda P_{et}. \lambda v_e. P(v); *[\text{parallel}\{e_{n+m}, e_n\}]$$

The subscript e_n indexes *same* to the containing eventuality, and the antecedent eventuality is determined by adding the offset m to n . The discourse condition Parallel is applied to these two eventualities.

We return now to (10), which receives the following representation:

$$(15) \quad [\text{Every}^{u_0} \text{ boy read the}^{u_1} \text{ same}_{e_2}^3 \text{ book.}]^{e_2}$$

With this indexing, the subscript for *same*, e_2 , indexes the containing S, rather than the containing NP as in Brasoveanu's system. Other than that, the analysis proceeds in exactly the same way; the superscript on *same* is the offset, which is the size of the stack. Then, by using the *stack concatenation* operator $*$ below, the drs allows *same* to impose Parallel on two instantiations of the eventuality, $[\text{read}\{u_0, u_1\}]$.

$$(16) \quad \max^{u_0}([\mathbf{atoms-only}\{u_0\}, \mathit{boy}\{u_0\}]);$$

$$\mathbf{dist}_{u_0}([u_1, e_2 | \mathbf{atoms-only}\{u_1\}], \mathbf{singleton}\{u_1\}, \mathit{book}\{u_1\}), e_2 : \mathit{read}\{u_0, u_1\};$$

$$*[\mathbf{parallel}\{e_{2+3}, e_2\}])$$

$$\begin{array}{|c|c|c|} \hline u_0 & u_1 & e_2 \\ \hline \mathit{boy1} & \mathit{book1} & \mathit{read}(\mathit{boy1}, \mathit{book1}) \\ \hline \end{array} \quad * \quad \begin{array}{|c|c|c|} \hline u_0 & u_1 & e_2 \\ \hline \mathit{boy2} & \mathit{book2} & \mathit{read}(\mathit{boy2}, \mathit{book2}) \\ \hline \end{array}$$

$$= \begin{array}{|c|c|c|c|c|c|} \hline u_0 & u_1 & e_2 & u_3 & u_4 & e_5 \\ \hline \mathit{boy1} & \mathit{book1} & \mathit{read}(\mathit{boy1}, \mathit{book1}) & \mathit{boy2} & \mathit{book2} & \mathit{read}(\mathit{boy2}, \mathit{book2}) \\ \hline \end{array}$$

Hardt and Mikkelsen’s meaning for *same* can be applied for internal readings just as it is applied for external readings. However, the imposition of Parallel for internal readings would appear to be vacuous – as Hardt and Mikkelsen, say, for internal readings “it is somewhat difficult to discern the interpretive effect of same” (p 25). And indeed it is unusual to impose a discourse condition on the implicit predications that arise from distributive structure in this way. However, as we will see, there are in fact clear effects of parallelism on these internal readings.

4. Hardt and Mikkelsen’s Observations – External Readings

Hardt and Mikkelsen (2015) present a series of contrasts that distinguish *same* from *different*, as well as other anaphoric forms. In each case *same* is ruled out where *different* and other anaphoric forms are allowed.

Distinct Antecedent

The following example is originally due to Hardt et al. (2012), who observe that it is most naturally read as describing a single fish-catching event, and on that reading, *same* is infelicitous, while other forms are acceptable.

- (17) a. John caught a big fish, and
 b. he caught it/*the same fish without any fishing equipment.

Hardt et al. (2012) observe that *same* requires that the antecedent and containing clause must be distinct events. Hardt and Mikkelsen (2015) argue that this is a consequence of their parallelism constraint: Parallel is not satisfied because the containing clause, (17b), has a manner modifier, *without any fishing equipment*, which lacks a corresponding parallel element in the antecedent clause, (17a). Moreover, no such parallel element can be inferred, without losing the single-event reading.

- (18) [John^{u₁} caught a^{u₂} big fish]^{e₃},
 a. and [he_{u₁} caught it_{u₂} without any fishing equipment]^{e₄}.
 b. *and [he_{u₁} caught the^{u₄} same_{e₅⁻¹} fish without any fishing equipment]^{e₅}.

The following is the drs for the antecedent clause in (18):

- (19) [u₁, u₂, e₃ | u₁ = John, fish(u₂), big(u₂), e₃ : caught {u₁, u₂}]

The following is the drs for the continuation in (18a), which is acceptable:

- (20) [e₅ | e₅ : caught {u₁, u₂, without-equipment}]

(21) gives the drs for the infelicitous continuation with *same*:

- (21) [u₄, e₅ | fish(u₄), u₄ = u₂, e₅ : caught {u₁, u₄, without-equipment}];
 *[parallel {e₅, e₄}]

Here we can see that Parallel fails. We can see that e₅ is caught(u₁, u₄, without-equipment), and e₄ is caught(u₁, u₄). Thus Parallel fails because there are not similar parallel elements.

Negated Antecedent

- (22) John didn't read *War and Peace*.
 a. He read a different book.
 b. Susan read the same book.
 c. Susan read it.

According to Hardt and Mikkelsen (2015), a negated antecedent is ruled out for *same*, because the antecedent eventuality must be accessible, as defined in DRT (Kamp and Reyle (1993)). They argue that this shows that the effect is a consequence of the fact that *same* imposes the Parallel condition on the containing and the antecedent eventuality; if the antecedent eventuality is not accessible, the drs would be ill-formed.

Hardt and Mikkelsen provide the following indexing for (22):

- (23) [not [John^{u₁} read *War and Peace*^{u₂}]^{e₃}].
 a. [He_{u₁} read a^{u₄} different_{u₄⁻²} book]^{e₅}.
 b. *[Susan^{u₄} read the^{u₅} same_{e₆⁻³} book]^{e₆}.
 c. [Susan^{u₄} read it_{u₂}]^{e₅}.

The following is the drs for the antecedent clause, (23).

(24) $[u_1, u_2 | u_1 = \textit{John}, u_2 = \textit{war-and-peace}, \mathbf{not}[e_3 | e_3 : \textit{read}\{u_1, u_2\}]]$

The drefs u_1 and u_2 are introduced at the top level drs, because they represent names. However, the eventuality dref e_3 is introduced in the drs that is embedded under **not**. Because of this, e_3 is not accessible to subsequent discourse. (25) shows the drs for the continuation in (23a).

(25) $[u_4, e_5 | \textit{book}\{u_4\}, e_5 : \textit{read}\{u_1, u_4\}]; *(\textit{book}(u_{4-2}); [\mathbf{disjoint}\{u_4, u_2\}])$

Here, *different* simply compares the drefs u_4 and u_2 . There is no accessibility problem, since u_2 is introduced by the name *War and Peace* and is therefore accessible at the top level drs.

The drs for (23b) is as follows:

(26) $[u_4, u_5, e_6 | u_4 = \textit{Susan}, \textit{book}\{u_5\}, u_5 = u_2, e_6 : \textit{read}\{u_4, u_5\}];$
 $*[\mathbf{parallel}\{e_6, e_3\}]$

The problem here is that *same* must compare two eventualities, e_6 and e_3 , but since e_3 is embedded under negation, it is not accessible. Finally, the drs for the continuation with a pronoun in (23c) is as follows:

(27) $[u_4, e_5 | u_4 = \textit{Susan}, e_5 : \textit{read}\{u_4, u_2\}]$

It is clear that this is acceptable: the pronoun is simply co-indexed with the accessible antecedent, u_2 .

Notice that on Brasoveanu's analysis, *same* would not be ruled out, since, like *different*, it merely requires an accessible NP antecedent, in this case *War and Peace*. Of course, it might appear that *War and Peace* is also inaccessible, since it is embedded within the negation. However, it is standard in DRT to treat proper names differently; they are normally accessible at the top level drs. See Kamp and Reyle (1993) for details.

Parallel Antecedent

- (28) John praised *War and Peace*.
- a. And Bill read it/*the same book.
 - b. But Bill criticized the same book.

According to Hardt and Mikkelsen (2015) *same* is ruled out in (28a), because Parallel is not satisfied by the antecedent clause *John praised War and Peace*, because it is not possible to infer a common non-trivial P that subsumes *read* and *praised*. Compare (28a) to the felicitous (28b): here Parallel is satisfied because one can infer from the verbs *criticize* and *praise* a

common non-trivial P, namely *evaluate*, with similar parallel elements $\langle John, Bill \rangle$ and $\langle War\ and\ Peace, the\ book \rangle$.

This is illustrated here for one version of (28):

- (29) [John^{u₁} praised *War and Peace*^{u₂}]^{e₃}.
 a. * And [Bill^{u₄} read the^{u₅} same^{e₆-3} book]^{e₆}
 b. But [Bill^{u₄} criticized the^{u₅} same^{e₆-3} book]^{e₆}

Here we translate (29a) into the following drs's:

$[u_1, u_2, e_3 | u_1 = John, u_2 = war-and-peace, e_3 : praise\{u_1, u_2\}]$

$[u_4, u_5, e_6 | u_4 = Bill, book\{u_5\}, u_5 = u_2,$
 $e_6 : read\{u_4, u_5\}]; *[\text{parallel}\{e_6, e_3\}]$

Observe that Parallel is imposed on eventualities e_6 (read(Bill, War and Peace)) and e_3 (praise(John, War and Peace)). As discussed above, Parallel fails here because the predicates *praise* and *read* do not entail a non-trivial common property.

5. New Observations – Internal Readings

In this section, we show that all the observations offered by Hardt and Mikkelsen (2015) with respect to external readings in fact apply in a similar way to internal readings.

Distinct Antecedent

The following example is due to Barker (2007):

- (30) a. David hit and killed Goliath.
 b. David hit and killed the same man.

As Barker observes, with Goliath, there is an ambiguity – there could be two events, a hitting event and a killing event, or there could be one event in which the hitting of Goliath was the killing of Goliath. With *same*, this ambiguity goes away – the hitting and killing must be distinct events. This is in fact observed by Hardt and Mikkelsen (2015), who point out that their Parallel constraint requires that the two events it relates are distinct. This is in fact completely analogous to the distinct antecedent claim given above with respect to external readings.

Following Hardt and Mikkelsen, we assume that (30a) receives the following drs representa-

tion:

$$(31) \quad [v_0, v_1, v_2 | v_0 = \mathbf{hit}, v_1 = \mathbf{killed}, v_2 = v_0 \cup v_1];$$

$$\mathbf{dist}_{v_2}([u_3, u_4, e_5 | \mathit{john}\{u_3\}, \mathit{man}\{u_4\}, e_5 : v_2\{u_3, u_4\};$$

$$*[\mathbf{parallel}\{e_{5+4}, e_5\}])$$

$$\begin{array}{|c|c|c|c|} \hline v_2 & u_3 & u_4 & e_5 \\ \hline \mathit{hit} & \mathit{john} & \mathit{man1} & \mathit{hit}(\mathit{john}, \mathit{man1}) \\ \hline \end{array} \quad * \quad \begin{array}{|c|c|c|c|} \hline v_2 & u_3 & u_4 & e_5 \\ \hline \mathit{killed} & \mathit{john} & \mathit{man2} & \mathit{killed}(\mathit{john}, \mathit{man2}) \\ \hline \end{array}$$

$$= \begin{array}{|c|c|c|c|c|c|c|c|} \hline v_2 & u_3 & u_4 & e_5 & v_6 & u_7 & u_8 & e_9 \\ \hline \mathit{hit} & \mathit{john} & \mathit{man1} & \mathit{hit}(\mathit{john}, \mathit{man1}) & \mathit{killed} & \mathit{john} & \mathit{man2} & \mathit{killed}(\mathit{john}, \mathit{man2}) \\ \hline \end{array}$$

The condition **parallel** is applied to the two eventualities, e_5 and e_9 . As discussed above, Hardt and Mikkelsen argue that the Parallel condition quite generally includes a requirement that the two eventualities are distinct. Since it is *same* that introduces the parallelism requirement, this explains the fact that (30a) allows the same-event reading, while (30b) does not.

Negated Antecedent

Above we saw that Hardt and Mikkelsen (2015) claimed that negated antecedents for *same* were ruled out because of the parallelism constraint. In particular, since *same* required parallelism between the containing and antecedent clauses, a negated antecedent clause rendered it inaccessible, resulting in an ill-formed drs.

In (32) we show an analogous effect with an internal reading, where there is a negated antecedent, and we see that *same* is ruled out, although an ordinary definite description (without *same*) is acceptable.

$$(32) \quad \text{John } \mathbf{didn't read}, \mathbf{but did skim} \text{ the book}/*\text{the same book}.$$

As observed by Carlson (1987), a controller can be a coordinated element that is interpreted distributively. Here, we have two coordinated verbal elements. Crucially, the coordination includes a negative polarity in the first conjunct and positive polarity in the second.

$$[v_0, v_1, v_2 | v_0 = \mathbf{did_not_read}, v_1 = \mathbf{did_skim}, v_2 = v_0 \cup v_1];$$

$$\mathbf{dist}_{v_2}([u_3, u_4, e_5 | \mathit{john}\{u_3\}, \mathit{book}\{u_4\}, e_5 : v_2\{u_3, u_4\}; *[\mathbf{parallel}\{e_{5+4}, e_5\}])$$

$$\begin{array}{|c|c|c|c|} \hline v_2 & u_3 & u_4 & e_5 \\ \hline \mathit{did_not_read} & \mathit{john} & \mathit{book1} & \mathit{not}(\mathit{read}(\mathit{john}, \mathit{book1})) \\ \hline \end{array} \quad *$$

v_2	u_3	u_4	e_5
skimmed	john	book2	skimmed(john, book2)

=

v_2	u_3	u_4	e_5	v_6	u_7	u_8	e_9
did_not_read	j	b1	not(read(j, b1))	skimmed	j	b2	skimmed(j, b2)

Here, we see that Parallel is applied to events e_5 and e_9 – it fails, because e_5 is negated.

Parallel Antecedent

It was observed by Hardt and Mikkelsen (2015) that Parallel gives rise to a preference for predicates that are semantically related. For example, *praise* and *criticize* both entail a common property, *evaluate*. On the other hand, *investigate* and *reject* are not related in a parallel way; rather, *reject* in this case is a consequence of *investigate*. Here we see this effect with internal readings.

- (33) a. John investigated and rejected the theory
 b. * John investigated and rejected the same theory.

- (34) John praised and criticized the same theory.

Below we show how this contrast is captured. We begin with the representation of the acceptable (34):

$[v_0, v_1, v_2 | v_0 = \text{praised}, v_1 = \text{criticized}, v_2 = v_0 \cup v_1];$
 $\text{dist}_{v_2}([u_3, u_4, e_5 | \text{john}\{u_3\}, \text{theory}\{u_4\}, e_5 : v_2\{u_3, u_4\}]; *[\text{parallel}\{e_{5+4}, e_5\}])$

v_2	u_3	u_4	e_5	
praised	john	theory1	praised(john, theory1)	*

v_2	u_3	u_4	e_5
criticized	john	theory2	criticized(john, theory2)

=

v_2	u_3	u_4	e_5	v_6	u_7	u_8	e_9
praise	j	t1	praise(j, t1)	criticized	j	t2	criticized(j, t2)

We observe that Parallel is imposed on eventualities e_5 (praise(john, theory1)) and e_9 (criticized(john, theory2)). Because of the semantic relationship between *praise* and *criticize*, Parallel is satisfied.

We turn now to the unacceptable (33b):

$[v_0, v_1, v_2 | v_0 = \mathbf{investigated}, v_1 = \mathbf{rejected}, v_2 = v_0 \cup v_1];$
 $\mathbf{dist}_{v_2}([u_3, u_4, e_5 | \mathbf{john}\{u_3\}, \mathbf{theory}\{u_4\}, e_5 : v_2\{u_3, u_4\}; *[\mathbf{parallel}\{e_{5+4}, e_5\}])$

v_2	u_3	u_4	e_5		
investigated	john	theory1	investigated(john, theory1)		*
v_2	u_3	u_4	e_5		
rejected	john	theory2	rejected(john, theory2)		

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v_2	u_3	u_4	e_5	v_6	u_7	u_8	e_9
investigated	j	t1	investigated(j, t1)	rejected	j	t2	rejected(j, t2)

Here, Parallel is imposed on eventualities e_5 (investigated(john, theory1)) and e_9 (rejected(john, theory2)). The predicates *investigate* and *reject* don't have a non-trivial entailed property, and thus Parallel is not satisfied.

6. Conclusions

Hardt and Mikkelsen (2015) show that *same* differs from other, related expressions, in that it gives rise to a parallelism requirement that must hold between the containing clause and an antecedent clause. They show this by presenting three types of parallelism effects: distinct antecedent, negated antecedent, and parallel antecedent. These effects were all shown to hold for external readings – cases where the antecedent clause and the containing clause appear in separate, overt predications. Although Hardt and Mikkelsen's account is formulated to apply in the same way for internal readings, they do not show that parallelism has clear effects in the case of internal readings.

In this paper, I have shown that all these parallelism effects, distinct antecedent, negated antecedent, and parallel antecedent, apply to internal readings just as they do for external readings. This is perhaps surprising – discourse constraints such as parallelism typically are applied to separate overt predications, rather than the implicitly distinct predications that arise in distributional structures.

I think these parallelism effects have not previously been observed for internal readings, because the typical internal readings have involved quantificational NP controllers, such as (2). In such cases, it is difficult to see how to construct examples that potentially violate parallelism. In this paper we have seen that they are readily constructed in examples involving controllers that are coordinated verbal categories. These examples can give rise to implicit predications that are not necessarily parallel, since the coordinated elements can differ in polarity, event structure or the semantic content of the predication, all of which are crucial in satisfying parallelism.

While it is well-established that anaphoric elements are sensitive to parallelism, the observations in this paper, like those of Hardt and Mikkelsen (2015), do not merely show that parallelism is relevant to the interpretation of *same*. Rather, the claim is that *same* is unacceptable in the absence of parallelism, and this is captured quite directly, by making the parallelism constraint part of the lexical meaning of *same*. The observations in this paper provide additional support for this view.

References

- Asher, N. (1993). *Reference to Abstract Objects in Discourse*. Dordrecht: Kluwer.
- Barker, C. (2007). Parasitic scope. *Linguistics and Philosophy* 30(4), 407–444.
- Brasoveanu, A. (2011). Sentence-internal *different* as quantifier-internal anaphora. *Linguistics and Philosophy* 34(2), 93–168.
- Carlson, G. (1987). Same and different: Consequences for syntax and semantics. *Linguistics and Philosophy* 10(4), 531–565.
- Hardt, D. and L. Mikkelsen (2015). Same but different. *Linguistics and Philosophy* 38(4), 289–314.
- Hardt, D., L. Mikkelsen, and B. Ørsnes (2012). Sameness, ellipsis and anaphora. In M. Aloni and F. Veltman (Eds.), *Proceedings of the Eighteenth Amsterdam Colloquium*, Amsterdam, pp. 341–350. Foris.
- Heim, I. (1985). Notes on comparatives and related matters. *Unpublished ms., University of Texas, Austin*.
- Kamp, H. and U. Reyle (1993). *From Discourse to Logic. Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic and Discourse Representation Theory*. Dordrecht: Kluwer.
- Kehler, A. (2002). *Coherence, Reference, and the Theory of Grammar*. Stanford, CA: CSLI Publications.
- Prüst, H., R. Scha, and M. van den Berg (1994). A discourse perspective on verb phrase anaphora. *Linguistics and Philosophy* 17(3), 261–327.