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### 1. INTRODUCTION

In this paper I will analyze the syntax and semantics of comparative clauses associated with the functional adjective *same*. While it has always been known that *same* resembles equatives in, among other things, the fact that its comparative clause is introduced by *as*, what has gone previously unnoticed is the fact that *same* can also appear with what appears to be a relative clause introduced by *that*:

- (1) a. Tonks is the same person *as* Nymphadora.  
 b. Harry admired the (very) same robes *that* Ron hated.

While comparative *as*-clauses require either gapping or VP-ellipsis, comparative *that*-clauses don't:

- (2) a. Lucius likes the same flowers *as*/\**that* his father. gapping  
 b. Lucius likes the same flowers *as*/*that* his father does. VP-ellipsis  
 c. Lucius likes the same flowers \**as*/*that* his father likes/bought. no VPE or deaccenting

Why are both options available? I will argue that the difference between the two is the degree of pied-piping: while *as*-clauses involve the movement of a null wh-operator out of the left periphery of the comparative clause counterpart of the *same*-DP (headed by a null noun identical to that heading the *same*-DP) to [Spec, CP], *that*-clauses are simply relative clauses, with the entire DP pied-piped to [Spec, CP]. As a result, we can explain why *as*-clauses require VP-ellipsis, relying on the hypothesis (Lasnik 1995) that PF violations can be repaired by ellipsis. I will also discuss what additional assumptions need to be made in order to explain how both types of clauses can satisfy the requirements of the adjective *same*.

### 2. BACKGROUND ASSUMPTIONS

As shown by Barker 2007, truth-conditions of sentences containing the internal *same* (i.e., cases where *same* does not require an overt *as*-clause or a contextual antecedent, but rather is licensed by a local plural or universal NP) can be achieved if the adjective *same* contributes an existential that takes scope over the plural or universal licenser of the internal *same*:

- (3) Two men with the same name are sitting in this room.

Barker offers the following paraphrase as the basis for semantic composition:

- (4)  $\exists f_{\text{choice}}$  Two men with the  $f_{\text{choice}}$  (name) are sitting in this room.

To obtain the desired truth-conditions, Barker proposes that *same* is a quantificational adjective with a rather complex meaning:

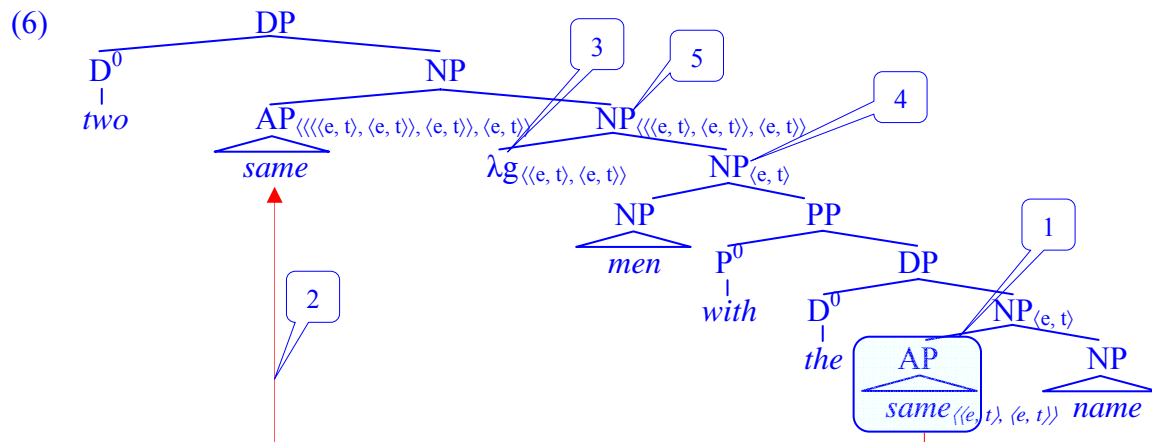
- (5)  $[[\text{same}]] = \lambda F \langle \langle e, t \rangle, \langle e, t \rangle \rangle . \lambda X_e . \exists f \langle \langle e, t \rangle, \langle e, t \rangle \rangle \forall x < X [[F(f)](x)]$

According to Barker, *same* introduces existential quantification over choice functions  $f$  of the unusual type  $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$ , which return a singleton set (rather than an entity). Semantic composition then proceeds as follows:

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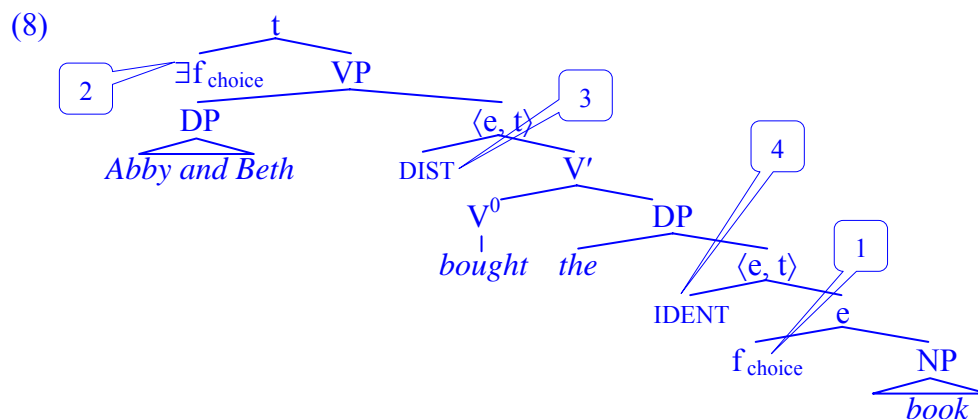


Because *same* is not interpretable in its base position [1], it must QR [2] and adjoin to some node of the type  $\langle e, t \rangle$  [4], leaving behind a trace of the semantic type  $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$  [1].  $\lambda$ -abstraction [3] over the variable then yields the correct semantic type for the sister of *same* [5]. This also correctly predicts that *same* must be attributive (since the  $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$  trace that it leaves behind has to be) and (with some qualifications) that *same* induces definiteness on the DP containing it (as the particular choice-function it introduces has the presupposition of uniqueness).

Setting aside the various minor problem with this proposal (see Matushansky 2008, 2010 for details), it clearly cannot be extended to the so-called "deictic *same*", which appears to require an argument:

- (7)
- Beth bought the same car as Abby.
  - Beth bought the same car as yours.
  - Abby bought a BMW. Beth bought the same car.

An examination of the lexical entry in (5) suggests a straightforward modification of Barker's proposal (see Matushansky 2008, 2010) where *same* corresponds to a number of functional elements:



The choice function  $f_{\text{choice}}$  [1] and an existential closure over it [2] yield the scoping behavior of *same*.<sup>1</sup> A distributive operator [3] is required in order to obtain the distributive reading of the subject. Such an operator (or some equivalent thereof) is assumed to be present in all cases where a plural is not interpreted collectively. Finally, instead of Barker's novel

<sup>1</sup> The choice function treatment is not necessary for this analysis to work – any means of obtaining exceptionally wide scope for existentials will do.

$\langle\langle e, t \rangle, \langle e, t \rangle\rangle$  choice function, I propose to apply to the regular choice function [1] a two-place identity function identical to the type-shifting operator IDENT (Partee 1986) [4]:

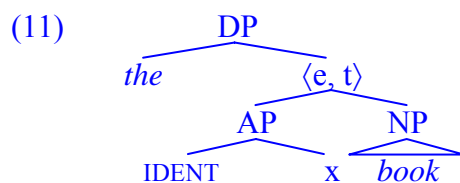
$$(9) \quad \llbracket \text{IDENT} \rrbracket = \lambda x . \lambda y . y=x$$

The semantic outcome of using an identity function is to make an NP denote the object identical to itself, a clear tautology that has the pragmatic effect of drawing focus onto *same* thus constraining it to appear only in environments where the existential can take different scopes, one of them leading to an interpretation involving alternatives.

Independent support for this proposal comes from the consistent cross-linguistic use of emphatic elements in the lexicalization of *same* (cf. Safir 1996), as well as the analysis of the German intensifier and focus particle *selbst*, exemplified in (10), proposed by Eckardt 2002, following Moravcsik 1972 to be precisely IDENT:

- (10) a. *Selbst JANE FONDA nascht manchmal Yogurette.* German  
 even Jane Fonda eats sometimes Yogurette  
*Even Jane Fonda sometimes eats Yogurette.*
- b. *Jane Fonda SELBST nascht manchmal Yogurette.*  
 Jane Fonda herself eats sometimes Yogurette  
*Jane Fonda herself sometimes eats Yogurette.*
- c. *Bert<sub>i</sub> hasst sich (selbst<sub>i</sub>).*  
 Bert hates REFL self  
*Bert hates himself.*
- d. *Wir fahren das.selbe Auto.*  
 we drive DEF.same car  
*We drive the same car (token).*

Having thus established the background, we now turn to the core of the proposal, which reposes on the fact that the semantics of IDENT as a two-place function allows it to combine with an NP in a different way, if its internal argument slot is filled by a contextually provided antecedent:



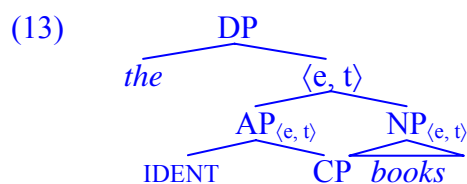
Needless to say, the DP in (11) corresponds to the discourse-anaphoric use of *same*, as in (12):

- (12) Alice bought “Neverwhere”. Beth bought the same book.

Assuming that *same* does not assign case, an overt NP is correctly predicted to be unable to appear in the position of x -- but a clause may. We will now use this fact to propose a straightforward analysis of the deictic *same* with a comparison clause.

### 3. THE COMPOSITIONAL SEMANTICS OF AN AS-CLAUSE

If *same* means IDENT, the comparative clause has to denote an entity:



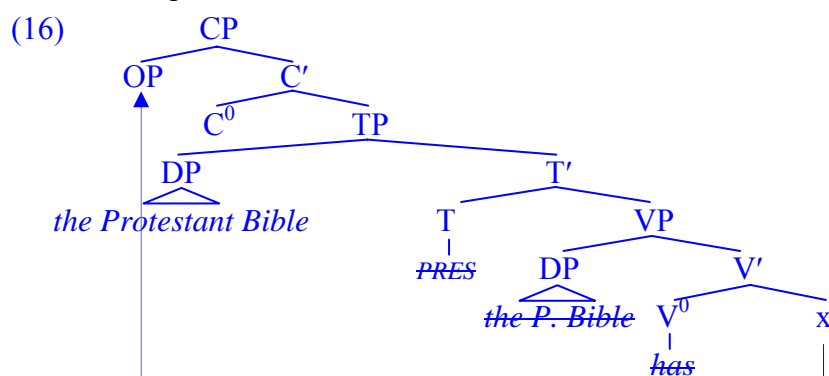
While some instances of *as*-clauses can be conceived to involve a semantically vacuous complementizer (and therefore denoting what the remnant NP does), others are not amenable to such an analysis:

- (14) a. Dr. Jekyll is the same man as Mr. Hyde.  
b. Kim introduced Sandy to the same person as Ray did Charlie.

As (14b) shows, what combines with *as* can (or perhaps must) be a full clause, which, as is easy to see, contains a gap. Although VP-ellipsis is obligatory in *as*-clauses appearing with *same*, the fact that they also involve operator movement is not difficult to demonstrate by forcing the *as*-clause to contain an island (cf. Dowty 1985, Beck 2000):

- (15) a. \*Abby bought the same book as Beth heard the claim that she did.  
b. \*Abby organized a party that took place on the same day as Beth did.

It seems therefore that the structure of *as*-clauses associated with *same* should resemble the following tree:



In what follows I will argue that *as*-clauses appearing with *same* obtain their denotation not through the contribution of *as* itself, but due to the presence of a maximality operator.<sup>2</sup>

### 3.1. The composition of the comparative clause

As is easy to ascertain, both the *as*-clause and the *that*-clause appearing with *same* introduce a maximality presupposition:

- (17) a. The Catholic Bible has the same books as the Protestant Bible, and then six more.  
b. \*The Protestant Bible has the same books as/that the Catholic Bible does, but the Catholic Bible has six more.

The grammaticality pattern in (17) shows that of the three possible relations between the set or plural individual that the *same*-DP in the main clause denotes (*the books contained in the Catholic Bible*) and the set or plural individual introduced by the comparative clause (*the books contained in the Protestant Bible*) only one obtains:<sup>3</sup>

<sup>2</sup> The hypothesis that *as*-clauses and *that*-clauses denote entities gives rise to the natural question of why such clauses cannot appear in argument positions, like other entity-denoting expressions, such as DPs, do. One possible answer to this question, as well as to the question of why relative clauses, although of the semantic type  $\langle e, t \rangle$ , cannot function as predicates, lies in the obligatory presence of an NP associated with the relative operator (or the null *wh*-operator): in any but DP-internal position an antecedent for this null NP cannot be reconstructed (Eddy Ruys, p.c.).

<sup>3</sup> In the logical forms below I use a set denotation for greater perspicuity without committing myself to an analysis in terms of sets rather than plural individuals.

- (18) a.  $\llbracket \text{the Catholic Bible books} \rrbracket \subseteq \llbracket \text{the Protestant Bible books} \rrbracket$  ✗  
 b.  $\llbracket \text{the Protestant Bible books} \rrbracket \subseteq \llbracket \text{the Catholic Bible books} \rrbracket$  ✓  
 c.  $\llbracket \text{the Catholic Bible books} \rrbracket \cap \llbracket \text{the Protestant Bible books} \rrbracket \neq \emptyset$  ✗

The definite DP *the same books as the Protestant Bible* ~~does contain~~ obviously doesn't denote the maximal set of books that the Catholic Bible contains. However, the presence of the definite article clearly indicates that it does denote *some* maximal set -- by virtue of the presuppositional IDENT operator, the maximal set of books identical to another set of books, those that the Protestant Bible contains. However, it remains unclear why the identity relation is established with the maximal set of books that the Protestant Bible contains rather than some set of books that it does, or in other words, why the comparative clause brings into play a maximal property.

The first possible answer to this question, which I will argue to be wrong, is suggested by the fact that *as*-clauses associated with equatives also are maximal:

- (19) a. Alice is as tall as Bill (and perhaps taller).  
 b. \*Alice is as tall as Bill and perhaps shorter.

As noted by Heim 1985 and Schwarz 2007, there is clear similarity between equatives and *same*-comparison going beyond the fact that they involve the same complementizer (in languages other than English):

- (20) a. Luise heeft het zelfde voorbeeld gezien als dit. Dutch  
 Luise has the same example seen as this  
*Luise saw the same example as this one.*  
 b. Parijs is net zo groot als Londen.  
 Paris is just as big as London  
*Paris is as big as London.*
- (21) a. Lena kupila takuju že knigu, kak (i) Vera. Russian  
 Lena bought such JUST book that AND Vera  
*Lena bought the same kind of book as Vera.*  
 b. Lena kupila takuju že doroguju knigu, kak i Vera.  
 Lena bought such-F.SG JUST expensive book how AND Vera  
*Lena bought as expensive a book as Vera did.*

It seems therefore that it is the complementizer *as* that contains a maximality operator or at least unambiguously indicates its presence. The problem with this approach is the fact that *that*-clauses in the environment of *same* are also maximal, but they are not so inherently:

- (22) I read a book that Chomsky wrote.

Example (22) clearly does not mean that Chomsky wrote only one book or only one object, which is totally consistent with the use of the indefinite article. Had the relative clause in (22) been maximal, the indefinite article would have been impossible. It seems therefore that the maximality issue has to be solved for *that*-clauses appearing with *same*. The solution can be applied to *as*-clauses.

An objection could be levied to that: perhaps the contribution of *same* is pragmatic (for instance, it is only added for emphasis) and the interpretation of the *same*-DP containing a *that*-clause is computed in exactly the same way as the interpretation of any DP containing a relative clause:

- (23) a. the same books that/as/∅ the Protestant Bible does  
 b. the books that/∅ the Protestant Bible does

Under the assumption that adding *same* does not change the truth-conditions, the fact that a relative clause does not induce maximality by itself doesn't matter:

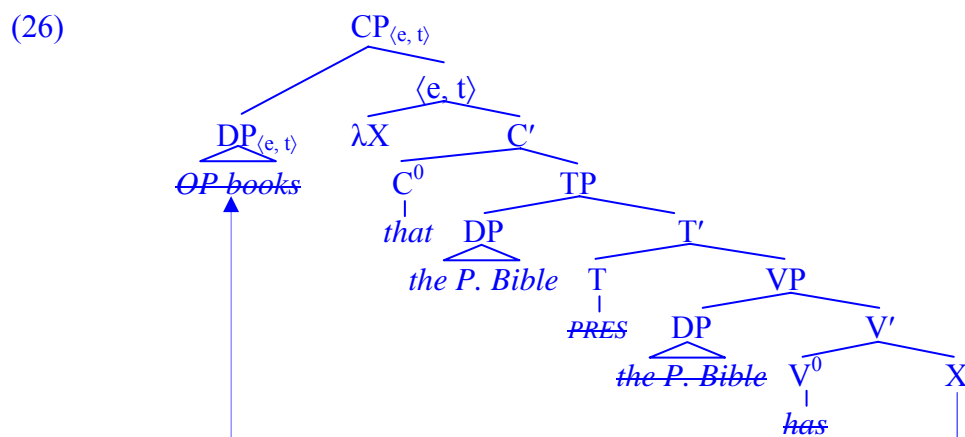
- (24)  $\llbracket \text{the same books that the Protestant Bible does have} \rrbracket = \iota x [\text{books}(x) \ \& \ \text{the-Protestant-Bible-has}(x)]$

The main argument against this analysis comes from the fact that the *that*-comparative clause has to be an argument of *same*: in all other environments *same* requires a contextually provided antecedent, a plural or universal licenser or a comparative clause -- the presence of a modifier is insufficient:

- (25) a. I read the same **interesting** books on the way back.  
b. I read the same books **on the topmost shelf** the next summer.  
c. I read the same books **that Chomsky wrote** #(that my teacher recommended).

Unless *same* in the examples above is interpreted deictically, they are ungrammatical, showing that a *that*-clause licensing *same* has to be an argument of the adjective rather than a modifier of the noun phrase.

This, however, does not mean that we must renounce the hypothesis that the *that*-clause associated with *same* is a relative clause. In fact, if the comparative clause denotes a maximal individual, then contrary to the analysis indicated in (16) above, the hypothetical wh-operator in the comparative clause cannot correspond to the missing argument, since the tree in (16) would necessarily denote the maximal individual contained in the Protestant Bible. Since the Protestant Bible can obviously contain more than just books, we need to ensure that a copy of the NP appears inside the comparative clause. The resulting structure quite straightforwardly corresponds to the usually assumed syntactic analysis of relative clauses:



As is usually hypothesized for relative clauses, the structure above denotes a property. To ensure the interpretability of its combination with *same*, a maximality operator is required:

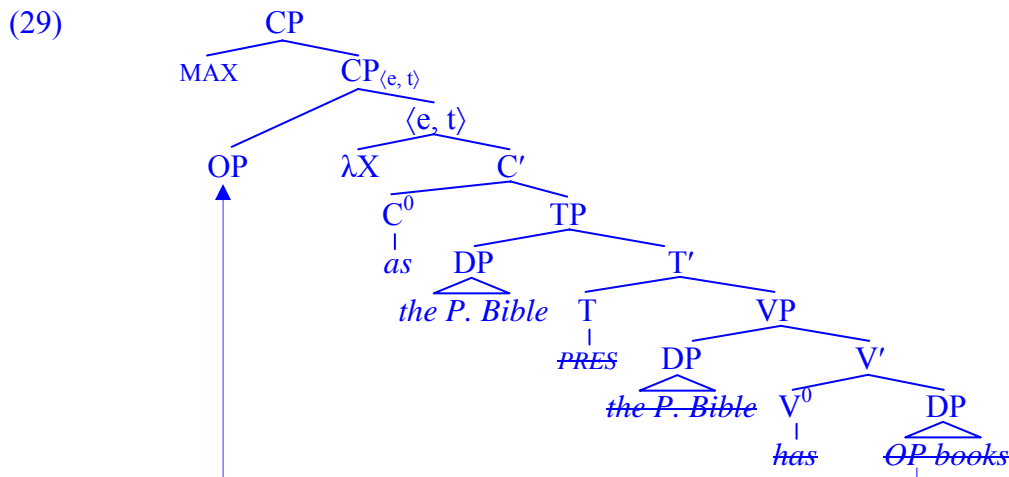
- (27)  $\text{max} = \lambda f_{\langle e, t \rangle} . \iota x [f(X) \ \& \ \forall Y [f(Y) \rightarrow Y \leq X]]$

As a side note, a relative clause functioning as a modifier of the NP must appear below the one associated with *same*:

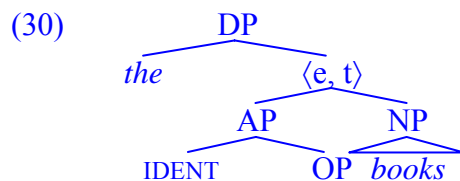
- (28) I read the same book that Chomsky wrote that my teacher recommended.

The ordering could be explained in two ways. On the one hand, from the semantic point of view no restrictive modification above *same* is possible, a property that *same* shares with superlatives and ordinals. On the other hand, under the hypothesis that the comparative clause is extraposed to avoid the violation of the Head-Final Filter, it will naturally appear to the right of the relative clause.

The explanation proposed above can easily be used for *as*-clauses under the assumption that there the wh-operator corresponds not to the counterpart of the *same*-DP, but to a subpart of it:



The representation in (29) is, however, still problematic. Assuming, as is usually done, that the trace of the null operator is interpreted as a variable of type  $e$  entails that the object DP denotes a proposition -- a clearly undesirable result. What is required is that the object DP become a definite description containing the trace of the wh-operator ( $\iota Y . \llbracket \text{books} \rrbracket (Y)$  and  $Y = X$ ), i.e., as if it were subject to the rule of Trace Conversion (Fox 1999, 2002). This result is achieved compositionally if the object DP, rather than consisting of just the operator and the NP restrictor, is a nearly exact copy of the object DP in the matrix clause:



The Head-Final Filter triggers obligatory extraposition of the CP argument of *same*. As a result, the main clause VP contains a gap in the correct position and therefore constitutes a suitable antecedent for the VP-ellipsis in the comparison clause. Since the null wh-operator is vacuous and leaves behind a trace of the type  $e$ , its own type is immaterial. However, given that its counterpart in the main clause is a CP, I hypothesize that the presence of *as* correlates with the extraction of a non-DP that is nonetheless neither a modifier nor a predicate. Support for this proposed correlation comes from several other environments. Thus in one kind of a parenthetical the movement of a null operator arguably corresponds to a CP (Potts 2002a, 2002b, building on Ross 1984):

(31) [<sub>CP</sub> Americans should get cheap oil], as the whole world knows t.

Likewise, in the following examples *as* in the subordinate clause clearly correlates with extraction of a non-entity:

- (32) a. Elizabeth is as tall as Mary.  
b. James noticed this, as did some of his courtiers.

It remains unclear whether *as* corresponds to the complementizer, showing agreement with the null operator, or to the operator itself. For the sake of concreteness I will adopt the former option here.

### 3.2. The choice of the complementizer and the Left Branch Condition

The analysis proposed above suggests that the only difference between *as*-clauses and *that*-clauses associated with *same* is in the degree of material that the null operator pied-pipes to



the left periphery of the subordinate clause. When the extracted material corresponds to a DP containing a null wh-operator on the left branch, the resulting structure is a relative clause with the complementizer *that*. Conversely, when only the null wh-operator moves to the left periphery of the subordinate clause, an *as*-clause is obtained.

The latter structure violates the so-called Left Branch Condition (Ross 1967, Borsley 1983, Corver 1990): an overt wh-operator cannot be extracted out of the left branch of a DP and the entire DP must be pied-piped along. This difference between the two structures allows us to explain why VP-ellipsis is obligatory in comparative *as*-clauses but not in comparative *that*-clauses:

- (33) a. The same rule applies to this case as/\*that to the previous one. gapping  
 b. The lawyer gave the same answer to Jane as/that she did to John. pseudo-gapping  
 c. Jane gave me the same flowers that/\*as she gave/sent John. no VPE or deaccenting

As noted by Pinkham 1982, another environment where VP-ellipsis in the comparative clause is obligatory is attributive comparatives and equatives:

- (34) a. Pico wrote a more interesting novel than Brio \*wrote/\*read/did/Ø a \_\_ play.  
 b. Erik bought a more expensive car than Polly \*bought/\*sold/did/Ø a \_\_ motorbike.

The fact that the movement of the null degree operator in the comparative clause of an attributive comparative violates the Left Branch Condition has been used by Bresnan 1975 to argue for a deletion (rather than movement) account of comparatives. However, as Pinkham 1982 and Kennedy and Merchant 2000 argue, a deletion account cannot by itself explain this obligatory VP-ellipsis.

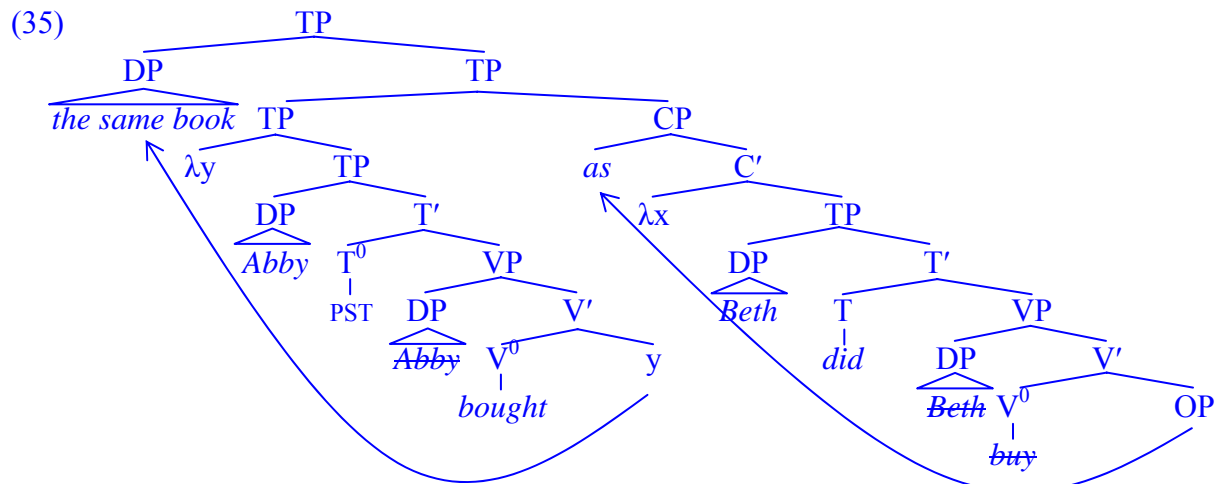
To account for this constraint on attributive comparatives and equatives, Kennedy and Merchant 2000 appeal to the hypothesis advanced by Lasnik 1995: a PF-violation can be salvaged if the offending structure is not pronounced. Kennedy and Merchant 2000 propose that movement out of the left branch is a PF violation and in order to repair it the VP needs to be deleted. Setting aside the technical details of their proposal, this new similarity between *same* and equatives cannot be ignored, and the Left Branch Condition is clearly at its core, since non-attributive comparatives or equatives do not require VP-ellipsis. The hypothesis that extraction out of the left branch violates a PF constraint and that this violation can be repaired by PF-deletion explains both sets of data, but also correctly predicts the fact that in *that*-clauses appearing with *same* VP-ellipsis is not required: in the analysis proposed above *that*-clauses are ordinary relative clauses where pied-piping of the DP containing the null wh-operator avoids the violation of the Left Branch Condition.

### 3.3. The position of the comparison clause

Given the established similarity between equatives and *same*, a natural alternative hypothesis to the analysis defended above would be to extend to *same* the analysis proposed by Grosu and Horvath 2006 as a modification of the Late Merger approach to comparatives (Bhatt and Pancheva 2004) -- what if the comparison clause is a clausal adjunct?<sup>4</sup>

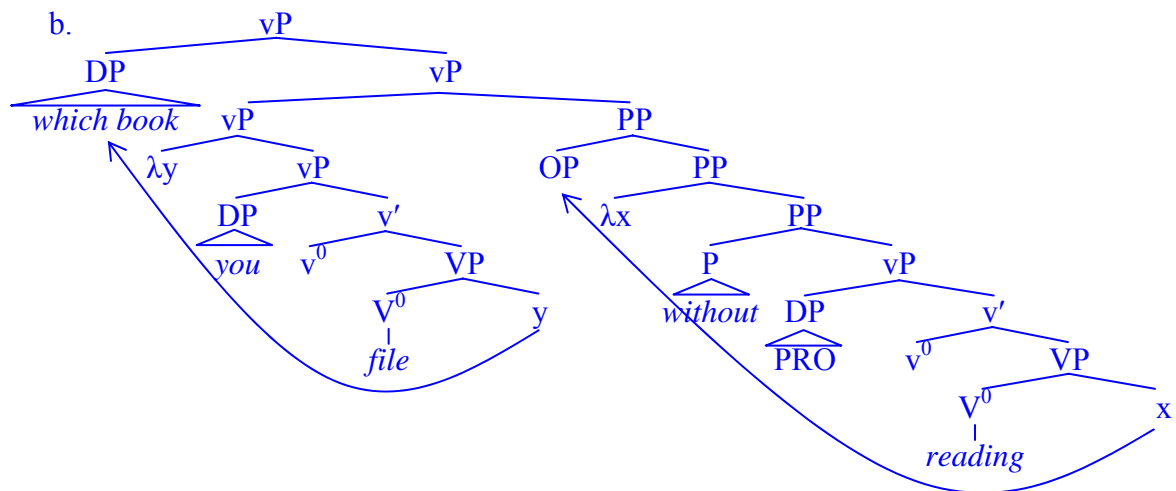
<sup>4</sup> A Late Merger approach is also conceivable, but less obviously motivated. All objections levied against the parasitic gap analysis below with apply to a Late Merger approach as well.





As is obvious from the tree above, for this analysis to succeed the predicate created by the wh-operator movement to the periphery of the comparative clause has to be licensed by the movement of the *same*-DP. Null operator movement to the left periphery of the adjunct accompanied by the obligatory movement of a DP to a position just above the adjunct is precisely the analysis proposed for parasitic gaps by Nissenbaum 1998a, 1998b, 2000:

(36) a. Which book did you file \_\_ without reading \_\_ ?



One possible advantage of this proposal is that there is no need to appeal to different combinatorics to account for the deictic *same* and the internal *same*: in both cases it would be the wide-scope existential quantification that ensures the correct interpretation of the *same*-DP. Furthermore, since the gap in the comparison clause is licensed by the movement of the *same*-DP, the Left Branch Condition is not violated. Also, both types of comparative clauses can be allowed to have their normal semantic type ( $\langle e, t \rangle$ ), though an independent mechanism would still be required to ensure their maximal interpretation. Finally, the movement of the DP containing *same* can be attributed to the independently justifiable need for an emphatic element to take clausal scope.

On the other hand, the clausal adjunct view has several disadvantages as well.<sup>5</sup> Of those the first and foremost is the incorrectly predicted island sensitivity of the *same*-DP in the main clause: as is easy to demonstrate, a *same*-DP can appear in a coordinate structure:

<sup>5</sup> Like Nissenbaum's analysis of parasitic gaps, the clausal adjunct view requires parasitic scope (Barker 2007) for compositionality. As parasitic scope has also been used to deal with comparative superlatives (Heim 1995/1999), I set the matter aside here.

(37) We bought [a mini-crib and the same mattress (as Janice)], and everything fit perfectly.

The Left Branch Condition is a more intricate issue. Although a *same*-DP can appear on the left branch, as in (38), it cannot do so when an overt comparative clause is present:

(38) For a man with a BMI of 25 to 29.9, a waist size of 38 inches signifies “increased” risk of the disease. But if [the same man’s waist] is 40 inches, he moves into the “high” risk group.

- (39) a. \*the same as George(‘s) man’s waist  
b. \*the same man’s as George(‘s) waist  
c. \*the same man as George(‘s)’s waist  
d. \*the same man’s waist as George(‘s)

The pattern in (39) cannot, however, be used as evidence for the island-sensitivity of the *same*-DP: (39a-c) also violate the Head-Final Filter, while (39d) can be argued to violate the Left Branch Constraint due to the extraposition of the *as*-clause.

Finally, the apparent island-sensitivity of *same* in the complex NP in (40) is misleading: the problem arises not in the main clause, but in the subordinate clause:

(40) \*Abby organized a party that took place on the same day as Beth did.

Once the VP-ellipsis in the comparison clause is reconstructed, it becomes clear that the operator movement violates the Complex NP Constraint in the comparative clause:

(40') as Beth did ~~organize [a party [that took place on OP day]]~~

Another problematic issue for the clausal adjunct view of comparative clauses is that of DP-internal comparative clauses:

(41) The same person that killed the old lady must have stolen her jewelry.

Just like the Late Merger account of comparatives and equatives (Bhatt and Pancheva 2004), the hypothesis that the comparative clause is merged at the clausal level predicts that it cannot be found inside a DP.

Finally, even though the clausal adjunct view allows us to dispense with the alternative mode of combination in (11), without this structure it will become impossible to account for the discourse-anaphoric use of *same*.

To sum up, it appears that the clausal adjunct view is to be dispreferred. I would like to note, however, that the hypothesis that the comparative clause is an argument of *same* cannot account for cases where two *same*-DPs appear in the same clause but share the comparative clause:

(42) Juliet gave the same book to the same person as Peter did.

Under the clausal adjunct view the two gaps in the comparative clause can be licensed by two independent movements of the two *same*-DPs (albeit with some acrobatics). I leave this issue, along with the issue of multi-headed comparatives (Bhatt and Pancheva 2001, Meier 2001) as a topic for future research.

#### 4. CONCLUSION

In this paper I have considered the distribution and syntax of comparative clauses appearing with *same*. Under the assumption that *same* lexicalizes a two-place identity function (IDENT) it becomes possible to straightforwardly account for the compositional semantics of both *as*-clauses and *that*-clauses, restricting the difference between them to the degree of pied-piping accompanying the movement of the null operator in the comparative clause. The flipside of the proposal is that it requires that both the *as*-clause and the *that*-clause denote entities, and

while the addition of the maximality operator to the comparative clause yields the correct semantic type and the right truth-conditions, it is not motivated syntactically.<sup>6</sup>

Among the advantages of the proposal advanced here is the fact that it readily explains why VP-ellipsis is obligatory in the *as*-clause but not in the *that*-clause, tying this difference to the fact that in the former but not in the latter the Left Branch Condition is violated. As a result, another point of similarity between *same* and equatives is naturally explained.

Although this paper cannot be treated as an argument for the analysis of *same* in the terms of wide-scope existential quantification and an identity function, it nonetheless shows how naturally this analysis accounts for the two types of comparative clauses associated with *same*.

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<sup>6</sup> The problem is shared by most standard accounts of comparatives and equatives, where the presence of a maximality presupposition in the comparative clause is stated but not explained.

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