



# External *same* and internal *same*: a unified account motivated by attitude reports

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## Take-home messages

- A simple ' $A = B$ ' analysis cannot accurately characterize the semantics of natural language **identity statements**, such as ***A is B***, ***A and B are the same***, etc.
- Attitude reports** motivate a new analysis:
  - It is necessary that **more than one *res*** are involved in an **identity relation**.
  - The identity relation between the *res*  $A$  and  $B$  is essentially a **mutual predication**, i.e., the contextually salient properties of the *res*  $A$  hold for the *res*  $B$ , and vice versa.
- Essentially, the adjective *same* can be considered as a **collector** (i.e., an **intersection**) of contextually salient properties (of each atomic *res* involved in an identity relation), and a **unified account for the external and internal uses of *same*** can be achieved on the base of a **sequential update**.

## Identity statements in attitude reports

**Big context:** Mary anonymously reviewed John's paper.

Sub-contexts	<i>de dicto</i> reports	<i>de re</i> reports
<b>John has access to only one <i>res</i>:</b> <i>De dicto</i> reports are <b>NOT</b> identity statements. <span style="float:right">~ ✓ <i>de re</i></span>	John read the review and thought that the review had such a weird empathy for baldness that its author must be a bald man. After learning the whole story, Sam said to Ken: ✓ 'John thought that the reviewer was a bald man.' # 'John thought that a bald man was the reviewer.' # 'John thought that the reviewer and a bald man were the same person.'	✓ 'John thought that Mary was a bald man.'
<b>John has access to two <i>res</i>:</b> <i>De dicto</i> reports are <b>identity statements</b> . <span style="float:right">~ <math>X</math> <i>de re</i></span>	Afterwards, during a conference, John saw a bald man talking about his paper. Thus John mistakenly took the bald man as the reviewer of his paper. After learning the whole story, Sam said to Ken: ✓ 'John thought that the reviewer was a bald man.' ✓ 'John thought that a bald man was the reviewer.' ✓ 'John thought that the reviewer and a bald man were the same person.'	# 'John thought that Mary was a bald man.' # 'John thought that a bald man was Mary.' # 'John thought that Mary and a bald man were the same person.'

## The semantics of identity statements

### Part I: $[[be_{asymmetric}]^w_{\langle e, et \rangle}]$ vs. $[[be_{symmetric}]^w_{\langle e, et \rangle}]$

- $[[be_{asymmetric}]^w_{\langle e, et \rangle}] \stackrel{def}{=} \lambda y. \lambda x. P_y(w)(x)$
- $[[be_{symmetric}]^w_{\langle e, et \rangle}] \stackrel{def}{=} \lambda y. \lambda x. P_y(w)(x) \wedge P_x(w)(y)$

#### $[[be_{asymmetric}]^w]$

- It expresses a **predication relation**.
- The attitude holder has access to **one *res* only** and ascribes some property (here  $P_y$ ) to this *res* (here  $x$ ).
- What is  $P_y$ ?**

$P_y$  has the type  $\langle s, et \rangle$  and I use it as a shorthand to mean **the contextually salient property of the *res* named  $y$** . E.g., Context: Tim just received his PhD and people are partying for this; Mike is drunk and goes to congratulate the person who is actually Bill.

(See Cumming 2008, Percus & Sharvit 2014.)  
✓ ***de re***: 'Mike thinks Bill is Tim, (but he doesn't think Tim is Bill).'

Here,  $P_{Tim}$  means the property of being the unique new PhD in the context, and thus the expression *Tim* contributes **intensionally** and resists any substitution of co-referring expressions.

**Note:** I assume that the exact meaning of  $P_{res\ name}$  reflects what properties an attitude holder associates with a certain *res* name in a context and involves a complex cognitive process for the attitude holder in perceiving the name; thus, the relation between a *res* name and  $P_{res\ name}$  is probably beyond the compositional semantics.

#### Part II: $[[same_{internal}]^w_{\langle e, et \rangle}]$

- $[[same_{internal}]^w_{\langle e, et \rangle}] \stackrel{def}{=} \lambda X. \bigcap_{x_i < X} P_{x_i}(w)$

- It takes a plural-entity-referring name  $X$  as its argument, and returns the intersection of contextually salient properties of each atomic part of  $X$ .
- It is an anaphoric adjective, which needs a plural antecedent, i.e.,  $X$ .

- $[[Tully and Cicero are the same]]^w$

$[[Tully and Cicero]]^w = Tully \oplus Cicero$

$[[same_{internal}]^w = \lambda X. [\bigcap_{x_i < X} P_{x_i}(w)](Tully \oplus Cicero) = P_T(w) \sqcap P_C(w)$

**Assume there is a distributivity operator:**

$Dist \stackrel{def}{=} \lambda P. \lambda X. \forall x [x_{atom} < X \rightarrow P(x)]$

**Thus, for each atomic part of  $Tully \oplus Cicero$ , the property  $P_T(w) \sqcap P_C(w)$  holds for it.**

$\therefore [[Tully and Cicero are the same]]^w = [[Tully is_{symmetric} Cicero]]^w$

#### $[[be_{symmetric}]^w]$

- It expresses an **identity relation**.
- The attitude holder has access to **two *res*** via two acquaintance relations and eventually recognizes an identity relation between them.
- Symmetric *be* relates two *res* named  $x$  and  $y$ :  $P_x$ , which means the contextually salient properties of the *res* named  $x$ , holds for the *res* named  $y$ , and vice versa.
- Thus, in the use of  $be_{sym}$ , both the expressions  $x$  and  $y$  contribute **extensionally** – as variable names referring to a certain *res* – as well as **intensionally** – as contextually salient properties.

### $[[John\ and\ Mary\ read\ the\ same_{internal}\ book]]$

- Things that are involved in an identity relation (i.e., the antecedent of  $[[same_{internal}]]$ ):  
 $f_{choice1}[\lambda x. J\ read\ x] \oplus f_{choice1}[\lambda x. M\ read\ x]$   
 $\therefore$  Here,  $[[same]] = \lambda x. J\ read\ x \sqcap \lambda x. M\ read\ x$
- Accounting for the **island effects** of  $same_{inter}$ :  
\* **Everyone rejected the claim that Mary read the  $same_{internal}$  book.** Carlson 1987  
No QR can happen to derive  
 $\lambda x. A/B/C... rejected\ the\ claim\ that\ M\ read\ x.$
- The **scope taking behavior** of *same*: Along with its binder, i.e., the plural entity. (This is consistent with Barker 2007's 'choice function + parasitic scope' analysis.)

## External *same* and internal *same*: a unified account

- Bumford 2015: the interpretation of a universal quantifier within dynamic semantics involves a **sequential update**. Thus,  
 $[[Every\ one\ met\ the\ same\ man]] = [[A\ met\ a\ man]] \wedge [[B\ met\ the\ same_1\ man]] \wedge [[C\ met\ the\ same_2\ man]] \wedge \dots$
- Essentially, there is man such that he has the property of  $\lambda x. met\ by\ A(x) \sqcap \lambda x. met\ by\ B(x) \sqcap \lambda x. met\ by\ C(x) \dots$

**Each  $[[same_i]]$  takes a list of properties of type  $\langle et \rangle$  and returns the intersection. ~  $[[same]]$  is of type  $\langle [et], et \rangle$ .**

- $[[same]]$  is only defined when the property list  $[P]$  has at least two members. When defined,  
 $[[same]] \stackrel{def}{=} \lambda [P]. \bigcap_{P_i \in [P]} P_i$  ( $[\alpha]$  is the Haskell notation for Lists; a list containing items of type  $\tau$  has the type  $[\tau]$ .)
- With a sequential update, the property list that serves as the argument of each  $[[same_i]]$  becomes longer and longer, and thus, each  $[[same_i]]$  in the sequence means a more and more specific property.

**Selected references** Barker. 2007. Parasitic scope. *L&P*. | Bumford. 2015. Incremental quantification and the dynamics of pair-list phenomena. *S&P*. | Carlson. 1987 Same and Different: Consequences for Syntax and Semantics. *L&P*. | Cumming. 2008. Variabilism. *Philosophical Review*. | Percus & Sharvit. 2014. Copular asymmetries in belief reports. *SALT24*.

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(I ignore the world variable  $w$  in this column for convenience.)