Choice functions in intensional contexts:  
Rehabilitating Bäuerle’s challenge to the scope theory of intensionality

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Introduction

Two theories of intensionality:

- **Scope Theory:** \( \langle \lambda w (x.) \rangle x. w \)  
  - World variables are incorporated into content word denotations and valued by a parameter of interpretation.  
  - An expression’s evaluation world is determined by structural position.  
- **Báuerle’s Theory:** \( \lambda w (x.) \)  
  - World variables are syntactically bound pronouns that saturate arguments introduced by content words.  
  - An expression’s evaluation world is determined by its (possibly non-local) binder:

The same range of readings available for (8) are also available when the complement clause is finite:

(10) Mary thinks Jo bought a hat just like mine.
  a. opaque nonspecific  
  b. transparent specific  
  c. transparent nonspecific

How to derive the three readings while respecting the islandhood of finite clauses?

An attempt using choice functions:

(11) a. Mary thinks \( \exists f [\text{Jo bought } \langle /a \text{ hat just like mine} \rangle] \)  
  b. \( \exists f [\text{Mary thinks } \exists f [\text{Jo bought } \langle /a \text{ hat just like mine} \rangle]] \)  
  c. Mary thinks \( \exists f [\text{Jo bought } \langle /a \text{ hat just like mine} \rangle] \)  

But (11-b) contradicts (5) because it requires:

(12) Crucial assumption for (11) to work: A choice function returns a member of the NP’s extension at the actual world (or the evaluation world at the locus of existential binding).

Potential response: Revise (11-b) to (13), so that (5) can be maintained:

(13) \( \exists f [\text{Mary thinks } /a \text{ hat just like mine}] \)  

Remaining problem: Given the ban on successive cyclic QR, we erroneously rule out transparent specific readings for indefinites embedded under two or more finite clauses.

(14) a. context: Mary, Jo and Bill are out shopping. Bill finds a hat he likes and considers purchasing it. The hat is just like mine, but neither Mary, nor Jo, nor Bill know this. Jo thinks the hat looks great on Bill and hopes he’ll buy it. Jo says as much out loud, and Mary believes Jo.

\( \Leftarrow \) **true**

Conclusions

- Either choice functions have flexible behavior in intensional contexts (returning members of the NP’s extension at the actual world or at the local evaluation world), or the scope theory of intensionality is wrong.
- The binding theory of intensionality, on the other hand, has no problem with the relevant sentences, because we can equip indefinites with world pronouns whose binder determines which world’s extension the choice function’s output is drawn from.

(15) \( \lambda w \langle \text{Jo thinks} \rangle \langle \text{every Red Sox player} \rangle \exists f [\text{Jo bought } \langle /a \text{ hat just like mine}\rangle] \)  

(16) a. Mary thinks \( \exists f [\text{Jo bought } \langle /a \text{ hat just like mine}\rangle] \)  
  b. \( \exists f [\text{Mary thinks } \exists f [\text{Jo bought } \langle /a \text{ hat just like mine}\rangle]] \)  
  c. Mary thinks \( \exists f [\text{Jo bought } \langle /a \text{ hat just like mine}\rangle] \)  

A recurring theme in the literature is that the scope theory of intensionality undergenerates readings while the binding theory overgenerates readings.

Here we see even the flexibility afforded by choice functions may not be enough to save the scope theory from Bäuerle’s challenge (an undergeneration problem), once a fuller range of facts are brought to bear.

Bäuerle’s challenge to the scope theory

Keshet’s (2010) loose translation of one of Bäuerle’s German examples:

(1) Jo thinks \( \text{[every Red Sox player is staying in some 5-star hotel downtown]} \).

Relevant reading:

(2) a. every Red Sox player is read de re. (Jo’s belief is about a group of men that happen to make up the Red Sox team, possibly unknown to Jo).  
  b. Jo thinks all the men in question are staying at the same 5-star hotel downtown.  
  c. some 5-star hotel downtown is read de dicto. (Its context is part of Jo’s belief, and there may not even be any such hotels in the actual world.)

This is a problem for the scope theory, because (2-a-c) impose mutually contradictory scope requirements.

(3) a. every Red Sox player > think  
  b. some 5-star hotel downtown > every Red Sox player  
  c. think > some 5-star hotel downtown

A shortcoming of (4) not discussed by Keshet (2010) (4) involves QR out of a finite clause, which is not ordinarily possible (May 1977).

An easy fix: Adopt Keshet’s (2011) ‘split intensionality’ setup, so that QR can target a position inside the finite clause island but outside the intensional scope (syntactically delineated by “\( \langle \ldots \rangle \)” of the attitude verb:

(6) \( \exists f [\text{Jo thinks } \langle /a \text{ hat just like mine}\rangle] \)

On this theory, \( \wedge \) is an ‘intensifier’, obviating Heim & Kratzer’s (1998) Intensional Functional Application so that composition can instead proceed via (ordinary) Functional Application.

(7) \( [\langle x \rangle] = \langle \lambda w \langle x \rangle \rangle \iff f = 1 \) in \( w \)