Knowing whether A or B

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Schaffer's problem of convergent knowledge
(J. Schaffer 2007)

(1) a. Bill knows whether George Bush or Will Ferrell is on TV.
b. Bill knows whether George Bush or Janet Jackson is on TV.

Outline

1. Polar and alternative questions
2. Ascriptions and Context
3. Conclusion

Polar vs Alternative Questions

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b. *Yes/*No
c. French / Italian.

(Cornulier 1982, Haspelmath 2000, Han & Romero 2003).

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(Cornulier 1982, Haspelmath 2000, Han & Romero 2003).

- Schaffer's target: alternative readings

Strongly and weakly exhaustive answers

(5) Who called?

Context: only Mary and John called.

- Karttunen (weakly exhaustive answer): Mary and John called.
- Groenendijk and Stokhof (strongly exhaustive answer): Mary and John called, and nobody else called.

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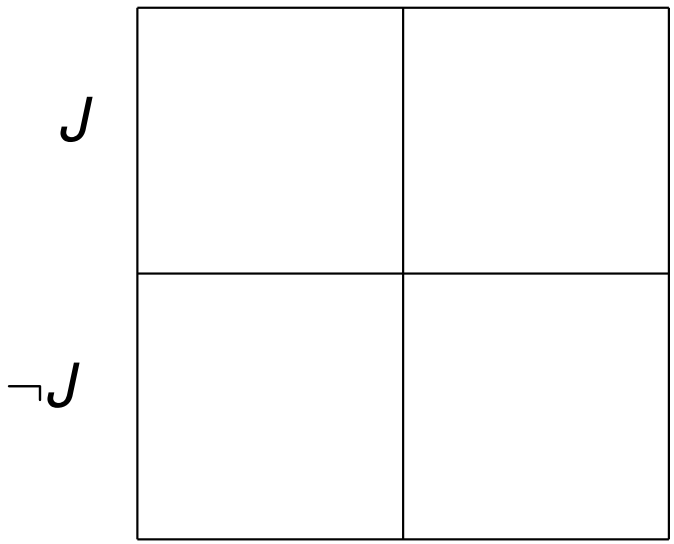
- In favour of GS: suppose only Mary called. John knows Mary called, but also believes that Sue called. Whould we say that John knows who called? (Spector 2006).

Partition Semantics

(8) Is BUSH or JANET JACKSON on TV?

- Answers (GS): $\{BJ, B\neg J, \neg BJ, \neg B\neg J\}$
- Assumption (AE): the presupposition, if any, that exactly one of the disjuncts should be true is not part of the answerhood conditions.



Convergent or not

Context: Bush and noone else is on TV.

(9) a. Is Bush or Janet Jackson on TV?
b. True answer (K): Bush is on TV.
c. True exhaustive answer (GS): Bush is on TV and Janet Jackson is not on TV.

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(10) a. Is Bush or Will Ferrell on TV?
b. True answer (K): Bush is on TV.
c. True exhaustive answer (GS): Bush is on TV and Ferrell is not on TV.

Comparison

- on K.'s analysis: the two questions are convergent, and (A) holds.
- on GS's analysis: the two questions are not convergent, (A) does not hold.

(11) John knows that Bush is on TV and that Jackson is not

(12) John knows that Bush is on TV and that Ferrell is not.

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- GS's semantics does not support Schaffer's predictions
- In both cases, we ignored further restrictions on the space of answers: for instance, it may be presupposed that exactly one person is on TV.

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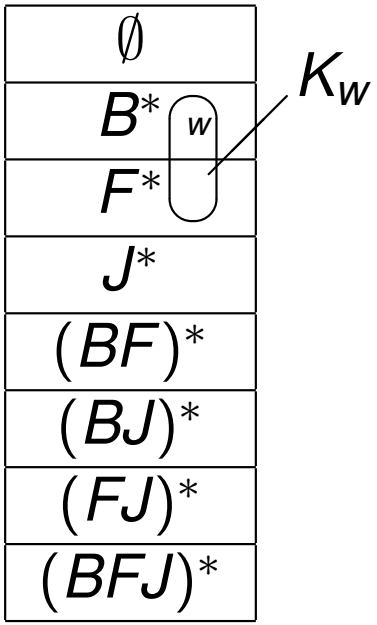
(13) "S knows that P" is true in w iff $K_w \subseteq P$

(14) "S knows whether A or B" is true in w iff $K_w \cap (A \cup B) \subseteq A$ or $K_w \cap (A \cup B) \subseteq B$


∅
B*
w
F*
J*
(BF)*
(BJ)*
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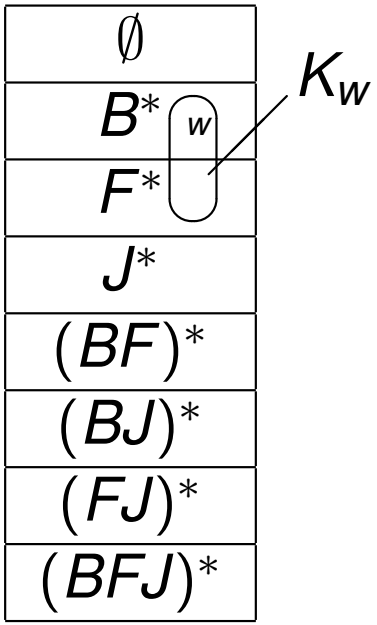
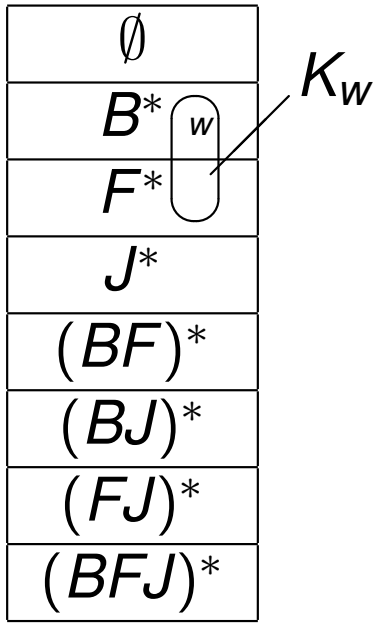
K_w



(15) a. $K_w \cap (B \cup F) \not\subseteq B, \not\subseteq F$.

b. Bill does not know whether Bush or Ferrell is on TV.



(15) a. $K_w \cap (B \cup F) \nsubseteq B, \nsubseteq F$.

b. Bill does not know whether Bush or Ferrell is on TV.

(16) a. $K_w \cap (B \cup J) \subseteq B$

b. Bill knows whether Bush or Jackson is on TV.

Partial answers

- Suppose Bill is asked whether Bush or Jackson is on TV. Bill is certain it is not Jackson, but thinks it might be Ferrell. What would Bill answer to:

(17) Is it Bush or Janet Jackson?

(18) a. (?) It's Bush.
b. At any rate, it's not Janet Jackson.

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- Another example (from Schaffer)

(19) Was the thirteenth president of the US Millard Fillmore or Hillary Clinton?

(20) a. (?) Millard Fillmore.
b. At any rate, not Hillary Clinton.

Dynamics of questions

(21) Is it a zebra or a horse?

(22) A zebra.

(23) Is it a zebra or a cleverly painted mule?

(24) I don't know.

(25) So is it a zebra, or a horse?

(26) Well, not a horse, but...

Consequence: one cannot take the alternatives present in the question to systematically restrict the agent's epistemic state.

Alternative questions revisited

Representation	Q=?$(\phi \vee_a \psi)$= ?$p(p \wedge (p = \phi \vee p = \psi))$
Denotation	$[\![Q]\!]$=$\{(p, w) \mid w \in p$ & $p = [\![\phi]\!]$ *or* $p = [\![\psi]\!]\}$
Partition	Part(Q)=$\{(w, v) \mid (p, w) \in [\![Q]\!]$ *iff* $(p, v) \in [\![Q]\!]\}$
Topics	Top(Q)=$\{p \mid \exists w : (p, w) \in [\![Q]\!]\}$

(27) Did John leave, or did Mary leave?

a. Representation ?$p(p \wedge (p = \phi \vee p = \psi))$
b. Partition: $\{\phi \wedge \neg\psi, \neg\phi \wedge \psi, \neg(\phi \vee \psi), \phi \wedge \psi\}$
c. Topics: $\{\phi, \psi\}$

Contexts and Updates

- Context $C = (s_C, i_C)$: s_C=set of worlds(=context set); i_C= sequence of question denotations (=issues under discussion).

(28) a. $C + P = (s_C \cap [\![P]\!], i_C)$
b. $C + Q = (s_C, i_C + [\![Q]\!])$

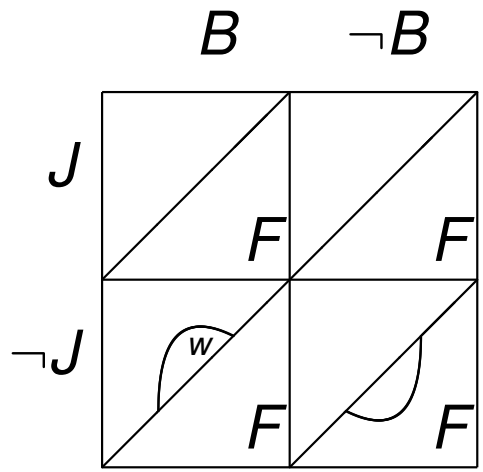
- Assertions update the context set; questions update the issues under discussion.

Knowledge contextualized

Top(C)= union of all Top(Q) for all Q in C.

(29) "S knows Q" is true in world w with respect to context C iff $K_w \cap \text{Top}(C) \subseteq \text{ANS}_w(Q)$ [simplified truth conditions]

Back to Schaffer's example



(30) a. S knows whether it is Bush or Janet Jackson on TV.

b. true in $C{+}?(B \vee_a J)$, but false in $C{+}?(B \vee_a J){+}?(B \vee_a F)$

(31) a. S knows whether it is Bush or Ferrell on TV.

b. false in $C{+}?(B \vee_a F)$, and likewise false in $C{+}?(B \vee_a F){+}?(B \vee_a J)$.

Presupposition failure

Context: I know I did not leave my keys in the fridge. Not sure about where I left them (sofa or table):

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- Is the second sentence false, or undefined?
- Our prediction: both sentences are true relative to $?(S \vee T)+?(S + F)$; asymmetry relative to $?(S + F)$.

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(34) Bill does not know whether A or B

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Problem: source of the presupposition? (disjunction? symmetry (Chemla)?)

Pragmatic ambiguity

“Knowing whether A or B" is pragmatically ambiguous:

- knowing the exhaustive true answer (before the question is asked: knowing implies knowing one knows)
- knowing a partial answer + contextual restriction of the uncertainty (after the question was asked; knowing does not imply knowing one knows)

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General perspective: "know" is not question-relative (pace Schaffer); ascriptions of knowledge can be contextualized, but knowledge per se is given an invariant meaning.