

CIA Leaks

Kai von Fintel[†] (An)Thony S. Gillies[‡]

[†]MIT/[‡]Michigan

2006 Pacific APA

Plan

1. Sketch CIA Theories
2. The Gauntlet
3. Sketch Alternative (Optional)

The Canon: Context-Dependency

- (1) a. Billy might be at the party
 b. *might*(B)(Billy is at the party)

- Truth-values assigned wrt contexts and indices: $c, \langle w_i, t_i \rangle$
- B is a modal base—function from indices to sets of worlds—that restricts *might* / *must*
- The value of B is supplied by context

The Canon: Context-Dependency

c-hook $B = \lambda i. \{v : v \text{ is compatible w/ } c\text{-relevant info at } i\}$

e.g. If only speaker's knowledge counts at c , then $B(i)$ is the set of worlds compatible with what she knows at i

might $\llbracket \text{might}(B)(\varphi) \rrbracket^{c,i} = 1$ iff $\exists v \in B(i) : \llbracket \varphi \rrbracket^{c, \langle v, t_i \rangle} = 1$

must $\llbracket \text{must}(B)(\varphi) \rrbracket^{c,i} = 1$ iff $\forall v \in B(i) : \llbracket \varphi \rrbracket^{c, \langle v, t_i \rangle} = 1$

c-sensitivity $\times 2$ change who's info counts, or what info they have

Kratzer – 1986

Suppose a man is approaching both of us. You are standing over there. I am further away. I can only see the bare outlines of the man. In view of my evidence, the person approaching may be Fred. You know better. In view of your evidence, it cannot possibly be Fred, it must be Martin.

- (2) The person approaching might be Fred.
- (3) The person approaching cannot be Fred.

MacFarlane

- (4)
 - a. Sally: Joe might be in Boston
 - b. George: No, he can't be – I just saw him in the hall five minutes ago.
 - c. Sally: Oh, I guess I was wrong. He can't be in Boston
 - d. Sally: ??OK, he can't be in Boston. But I was still right when I said he might be.

Egan

Bond has planted a bug at SPECTRE headquarters. He and Leiter are listening in from London. But before he left, he also planted misleading evidence pointing to his being in Zürich.

- (5) a. Blofeld: Bond might be in Zürich
- b. Number 2 (to Blofeld): That's right/What you said is true — he might be in Zürich.
- c. Leiter (to Bond): ??That's right/What Blofeld said is true — you might be in Zürich.

Lesson

The Canon (and variants) has no room for the original *might*-claims to be true when uttered, but the *very same claims* to be false (and hence their “disagreeing counterparts” true) with respect to someone else’s evidence or at a different time

Context, Index, and Assessment

a-hook

- $B(?)$ should be the set of worlds compatible w/
the assessor's info *at the point of assessment*
- So B should take a as argument

might $\llbracket \text{might}(B)(\varphi) \rrbracket^{c,i,a} = 1$ iff $\exists v \in B(a): \llbracket \varphi \rrbracket^{c,\langle v,ti \rangle,a} = 1$

must $\llbracket \text{must}(B)(\varphi) \rrbracket^{c,i,a} = 1$ iff $\forall v \in B(a): \llbracket \varphi \rrbracket^{c,\langle v,ti \rangle,a} = 1$

Some Comments On The Official Version

- We take a point of assessment a to provide a world w_a , time t_a , and judge/assessor j_a – when it doesn't confuse things we identify the judge with the point
- We're glossing over some family squabbles between CIA agents – our Official Version captures the core of all of them, cleans up some problems some of them have at the boundaries, and puts it all in a way that easily compares to The Canon
- We leave it as a homework problem for you to see what the Official Version has to say about the motivating examples

Throw Down with the CIA

Secret We're not big fans of CIA theories

Goal Raise challenges we think any CIA theory must have some **non-handwaving** things to say about

Resisting Rejection

But — pace the CIA — not all *might*'s are retracted/rejected in the face of new evidence

Billy is looking for her keys. Alex is trying to help.

- (6)
 - a. Alex: The keys might be in the drawer
 - b. Billy: [Looks in the drawer] They're not. Why did you say that?
 - c. Alex: Look, I didn't say they *were* in the drawer. I said they *might be* there — and they might have been. Sheesh.

Particularly Resistant: *might* 's under *if*

- (7) If John is not in his office, he might be in New York
(We go to his office and find a note saying "I'm in Boston")
- (8) ??I guess I was wrong.

Disagreement and Agreement Have Multiple Targets

Mordecai and Pascal are playing Mastermind. After some rounds where Mordecai gives Pascal hints about the solution, Pascal says

(9) There might be two reds.

Possible responses:

- (10)
- a. That's right. There might be.
 - b. That's right. There are.
 - c. That's wrong. There can't be.
 - d. That's wrong. There aren't.

Compare

(11) I think it's raining out.

- (12) a. No, it isn't.
b. ??No, you don't.

Since the response can target either the modal claim or the embedded claim it needs to be carefully argued that: (i) this doesn't explain (enough of) the CIA data, and (ii) the CIA can accommodate these facts

might under PAST

(13) $\llbracket \text{PAST}(\textit{might}(B)(\varphi)) \rrbracket^{c,i,a}$

- CIA theories say that i is invisible to epistemic modals
- t_i will not in general be the same as t_a
- These two facts conspire to predict that too many PAST-*might*-claims are false (assuming PAST shifts t_i)

might under PAST: An Example

*Sophie is looking for some ice cream, and checks the freezer.
There is none in there. Asked why she opened the freezer, she
says:*

- (14) a. There might have been ice cream in the freezer
b. PAST(*might* (*B*)(*there is ice cream in freezer*))

- ▶ We say she can truly say so, even though at t_c she/we know there is no ice cream in the freezer

might under PAST: The Problem

(14-b) PAST(*might* (*B*)(*there is ice cream in freezer*))

is true iff

- there is a recent-ish $t' < t_c$: $\llbracket \textit{might} (B)(P) \rrbracket^{c, \langle w_c, t' \rangle, a} = 1$

But (assuming CIA) indicies are invisible to modals

- So $B(a)$ will have no P -worlds in it
- So the embedded *might* (B)(P) is false no matter what t is in the index
- So (14-b) is bound to be false

Time Lag: The Problem

CIA Prediction In general: when $t_a > t_{c/i}$ it is natural to think that t_a has a *smaller* set of open possibilities associated with it — it should be *easy to reject* earlier *might*-claims, and it should get *easier* as *more time passes* (since that in general means more facts have come in)

Time Lag: An Example

We are putting a randomly chosen card in an envelope. You catch a glimpse of the card and know that it is a black-suited face card.

- (15) a. You: It might be the King of Spades
 b. Us (10 years later, opening the envelope): ??Wrong!
 It's the Jack of Clubs!

Time Lag: Another Example

Detective Parker has been going over some old transcripts from Al Capone's courtcase in the 1920's—Capone is being asked about where some money is in relation to a particular safe:

- (16)
- a. Capone: The loot might be in the safe.
 - b. Parker: ??Wrong!/What Al said is false. Geraldo cracked the safe in the 80's and there was nothing inside.

Speaker/Assessor Asymmetries

When Speaker/Assessor have *asymmetric* information, CIA theories predict “Disagreement/Rejection” where there often is none

$A < S$ A should not allow a sentence that rules out some of the cases she considers possible

$A > S$ A should not allow a sentence that allows cases she considers already ruled out

(Forget about time-coordinates of contexts, indices, and points of assessment — we don't need any more structure than worlds and folks)

Gibbard-Phenomenon: An Example

The Boss has two informants, Jack and Zack. There is a meeting of spies in a room, and The Boss, Jack, and Zack know that one and only one of their comrades P , Q , R is a turncoat. Jack looks through his peep hole and sees clearly that it is either P or Q who is the turncoat, and Zack looks through his peep hole and sees clearly that it is either Q or R who is the turncoat. Each slips The Boss a note:

- (17) a. (From Jack): It must be that either P is the turncoat or Q is the turncoat.
 b. (From Zack): It must be that either Q is the turncoat or R is the turncoat.

Gibbard-Phenomenon: The Problem

The Boss should conclude that Q is the turncoat, but (where a is the point of assessment The Boss occupies)

- $\llbracket \text{must}(B)(P \text{ or } Q) \rrbracket^{c,w,a} = 0$
because $B(a)$ has some R -worlds in it
- $\llbracket \text{must}(B)(Q \text{ or } R) \rrbracket^{c,w,a} = 0$
because $B(a)$ has some P -worlds in it
- It's a bad idea for The Boss to conclude something he thinks is false on the basis of reports he thinks are false

Mastermind (Again)

Mordecai and Pascal are playing Mastermind. After some rounds where Mordecai gives Pascal hints about the solution, Pascal says:

(18) There might be two reds.

Mordecai can agree by saying:

(19) That's right. There might be.

But CIA theories predict either (18) is false (at Mordecai) or (19) is infelicitous (violates Quantity)

might and and / or

Sally does not know where Joe is, but she knows he is in either Boston or New York. She says:

(20) Joe might be in Boston or he might be in New York

This entails two *might*-claims:

- (21) a. Joe might be in Boston
b. Joe might be in New York

But Assessor Knows More Than Speaker

CIA Prediction Assessor disagrees with Sally — she says something that entails something he thinks is false

- (22)
- a. Sally: Joe might be in Boston or he might be in New York.
 - b. George: ??Wrong!/That's false. He's in New York.
- (23)
- a. Sally: Joe might be in Boston or he might be in New York.
 - b. George: He can't be in Boston. He's in New York this week.
 - c. Sally: ??Oh, then I guess I was wrong.

Eavesdroppers Fare No Better

Blofeld finds the misleading evidence pointing to Bond being in Zürich. But Blofeld is no dummy. He knows that Bond might have planted it.

He can say (24-a) to Number 2, but Leiter (eavesdropping with Bond from London) cannot complain with (24-b):

- (24)
- a. Blofeld: Bond might be in Zürich or he might be in London.
 - b. Leiter: ??That's false/Blofeld's wrong!

More? (Yes, We Know ...)

- The same point can be made with *might /and* (but the *or*-variants are more robust)
- And quantificational environments

There has been a heist, and in the early stages of our investigation we narrow the field of suspects down to a dozen. It's early on, so we report to the press:

(25) There are many people who might be the culprit

Later — when we have eliminated all but two suspects — no one will accuse us of having said something false in the early going

Pragmatic Worry

Sally knows that Joe is either in Boston or New York but doesn't know which it is. And she knows that George has definite views on Joe's whereabouts.

CIA Prediction Assuming it is bad to say things you know your conversational partners think are false, Sally should not be able to say (20)

(20) Joe might be in Boston or he might be in New York.

(26) ... So, if he isn't in New York, he must be in Boston

Factive–*might* Constructions

- Factives like *realize* presuppose the truth of their complements
- But *might* (B)(P) can embed under factives, and the presupposed material can project
- ...in conversations where Assessor and Speaker think not- P

CIA Prediction In such cases we should have presupposition failure

Presuppositions in Conditional Antecedents Project

(27) If Sophie realizes there is no more ice cream, there will be trouble.

presupposes that there is no more ice cream — and so does

(28) If Sophie doesn't realize there is no more ice cream, there will be no trouble.

Meanwhile Back At MI6

Blofeld hasn't yet found the misleading evidence that points to Bond being in Zürich — indeed, he thinks that Bond has in all likelihood got back to London. Leiter, listening in from London with Bond, says:

- (29) If Blofeld realizes you might be in Zürich, you can breathe easy (he'll send Number 2 to Zürich to find you)

He might continue

- (30) If he doesn't realize soon that you might be in Zürich, we better get you out of here

Once , When , and Whether

[*Same story as before*]

- (31) a. Once Blofeld realizes you might be in Zürich, you can breathe easy
- b. When Blofeld realizes you might be in Zürich, you can breathe easy

Or:

- (32) Whether or not Blofeld realizes you might be in Zürich, you did a good job planting the bug and the evidence without being noticed.

The Sketch We Don't Have Time For

Ingredients

- *might / must* are quantifiers over worlds compatible with information at hand
- Groupwise distributed knowledge
- Uber-contexts, not contexts: a set of contexts (= a set of groups of agents engaged in the relevant investigation of whether P)

More Sketchiness

- A context c provides (= is) a group G_c of relevant agents — set of relevant agents engaged in the investigation
- We're *egalitarian* about who gets to be an agent
- Utterances take place against a *set* of such contexts — and speaker/hearer need not know just which “one context” they occupy
- Default: Given G_c epistemic modals quantify over modal bases representing the *distributed knowledge* of G_c
- Conversational Dynamics then has some work to do in filtering which G_c 's “survive” as *might*-claims are made/accepted in a conversation