Take Nothing for Granted

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very drafty. comments appreciated.

1 Introduction

This paper is a brief plea for the relevance of linguistic phenomena (specifically, the phenomenon of semantic presupposition) to epistemological theorizing about the a priori. In particular, I propose, explain, defend, and apply the following constraint on *knowability a priori* (with '$\mathcal{K}_\mathcal{A}$' abbreviating 'it is knowable a priori that').

(AK) For all φ, ψ such that φ semantically presupposes that ψ: if $\mathcal{K}_\mathcal{A}\varphi$, $\mathcal{K}_\mathcal{A}\psi$.

Roughly, (AK) claims a sentence's content is knowable a priori only if its semantic presuppositions are too. §2 defines the notion of 'semantic presupposition' invoked by (AK). §3 makes use of this definition (and some plausible assumptions about the closure of knowability a priori under a priori knowable entailment) to argue in favor of (AK).

The rest of the paper is devoted to exploring the (mostly negative) implications of (AK) for the a priori. Well-known arguments for the contingent a priori and a priori knowledge of logical truth founder when the semantic presuppositions of the putative items of knowledge are made explicit. Likewise, certain kinds of analytic truth turn out to carry semantic presuppositions that make them ineligible to be items of a priori knowledge. On a happier note, I argue that (AK) offers an appealing, theory-neutral explanation of the a posteriori character of certain necessary identities, as well as an interesting rationalization for a commonplace linguistic maneuver in philosophical work on the a priori.

2 Semantic presupposition

I'll be using the expression "semantic presupposition" idiosyncratically, so that every semantic presupposition is a "garden variety" presupposition (a presupposition in the standard sense of the linguistics literature), but not every garden-variety presupposition counts as a semantic presupposition.

It's important to be precise about the notion of semantic presupposition that (AK) invokes. First, some familiar conventions.[1]

[1]In my λ-notation, ':' indicates partiality. For example, $\lambda x : F(x).x$ is a partial identity function, mapping **all** and **only** those x's such that $F(x)$ to themselves.

$\Theta = \{$S, N, NP, V, VP, Aux, Conj, ConjP, ...$\}$ (syntactic types)
$\mathbf{V}$ = a vocabulary of English lexical items and logical constants
$\mathfrak{L} = \{\beta : \beta$ is a string over $\mathbf{V}$ and β is of type θ, for some $\theta \in \Theta\}$
$\mathfrak{L}_S = \{\varphi \in \mathfrak{L} : \varphi$ is of type S (a sentence)$\}$
$\mathfrak{D}_t = \{0, 1\}$ (the domain of truth-values)
$\mathfrak{D}_w = W$ (the domain of worlds)
$\mathfrak{D}_c = C$ (the domain of contexts of utterance)
$\mathfrak{D}_{\langle w,t\rangle} = \{p : p$ is a partial or total function from $\mathfrak{D}_w$ into $\mathfrak{D}_t\}$
$\mathfrak{D}_{\langle c,\langle w,t\rangle\rangle} = \{g : g$ is a partial or total function from $\mathfrak{D}_c$ into $\mathfrak{D}_{\langle w,t\rangle}\}$

$[\![\varphi]\!] \in \mathfrak{D}_{\langle c,\langle w,t\rangle\rangle}$
$[\![\varphi]\!]^c \in \mathfrak{D}_{\langle w,t\rangle}$ iff $[\![\varphi]\!]^c$ is defined; $[\![\varphi]\!]^{c,w} \in \mathfrak{D}_t$ iff $[\![\varphi]\!]^{c,w}$ is defined

$$[\![\varphi]\!] = \lambda c : [\![\varphi]\!]^c \text{ is defined} \;.\; \lambda w \;.\; \begin{cases} 1 \text{ if } [\![\varphi]\!]^{c,w} = 1 \\ 0 \text{ if } [\![\varphi]\!]^{c,w} = 0 \\ \text{undefined, otherwise} \end{cases}$$

(SP) clarifies the notion of semantic presupposition invoked by (AK). Let:

$\beta \in \mathfrak{L}$
w_c be the world locating c

(SP) β <u>semantically presupposes</u> that ψ iff β (garden-variety) presupposes that ψ, and *either*

1. For all $w \in \mathfrak{D}_w$: if $[\![\beta]\!]^{c,w}$ is defined, $[\![\psi]\!]^{c,w} = 1$, *or*
2. For all $c \in \mathfrak{D}_c$: if $[\![\beta]\!]^c$ is defined, $[\![\psi]\!]^{c,w_c} = 1$

(SP1) holds for β iff the following holds: for any world w, if $[\![\psi]\!]^{c,w} \neq 1$, then $[\![\beta]\!]^{c,w}$ is undefined. Informally, β semantically presupposes that ψ via (SP1) iff the semantic content of β is inevaluable at (undefined over) $\neg\psi$ worlds.

I assume that both NPs of the form $[_{\text{NP}}$ *the P*$]$ and sentences of the form $[_{\text{S}}$ $[_{\text{NP}}$ *the P*$]$ $[_{\text{VP}}$ *Q*$]]$ carry (SP1)-presuppositions. That is to say, I assume that "*The P Q* expresses a partial proposition which is defined only for worlds [where] there is a unique P" (von Fintel, 2004). This is plausible, in light of the following lexical proposals for $[\![the]\!]^{c,w}$, from Heim and Kratzer (1998) and von Fintel and Heim (2007), respectively. ($\mathcal{P} = [\![P]\!]^{c,w}$, $\mathcal{Q} = [\![Q]\!]^{c,w}$.)

(1) $\lambda\mathcal{P} : \exists! x[\mathcal{P}(x) = 1] \;.\; \lambda\mathcal{Q} \;.\; \forall x[\mathcal{P}(x) = 1 \rightarrow \mathcal{Q}(x) = 1]$
(2) $\lambda\mathcal{P} : \exists! x[\mathcal{P}(x) = 1] \;.\; \iota y[\mathcal{P}(y) = 1]$

Each lexical entry for 'the' is a partial function, defined only over those $\mathcal{P}$ such that there is a unique individual that $\mathcal{P}$ maps to 1. So, for any w, $[\![the\ P]\!]^{c,w}$ (and, so,

$[\![the\ P\ Q]\!]^{c,w}$) is undefined unless there is a unique P in w.[2]

SP2, on the other hand, holds for β iff the following holds: for any context c, if $[\![\psi]\!]^{c,w_c} \neq 1$, then $[\![\beta]\!]^c$ is undefined. Informally, β semantically presupposes that ψ via SP2 iff the *character* of β is inevaluable at $\neg\psi$ contexts – iff β has no world-evaluable semantic content at $\neg\psi$ contexts.

Cases of *stipulative definition* involve (SP2)-presuppositions.[3] Consider a case where a lexical meaning for the name 'Julius' is implicitly fixed by stipulating (3).

(3) Julius is the inventor of the zip.

Let $\zeta = \ulcorner$there is a unique inventor of the zip$\urcorner$. For any context c such that $[\![\zeta]\!]^{c,w_c} \neq 1$ (any context located in a world without a unique inventor of the zip), both $[\![(3)]\!]^c$ and $[\![(3')]\!]^c$ are undefined.

(3′) Julius is dead in 1909.

Why? In all $\neg\zeta$ contexts c, the stipulation fails to fix a meaning for 'Julius' – i.e., $[\![Julius]\!]^c$ is undefined. That is to say:

$$[\![Julius]\!] = \lambda c : [\![\zeta]\!]^{c,w_c} = 1\ .\ \lambda w\ .\ \imath x(x \text{ invented the zip in } w_c)$$

While it is plausible that stipulatively defined terms have characters (or something close enough), these characters are *partial* – they have world-evaluable content only at contexts where the definition's presupposition is met. Thus, (3) and (3′) have world-evaluable content only at ζ contexts.

3 Motivation

If φ semantically presupposes that ψ, then either (SP1) or (SP2) holds for φ and ψ. In either case, given a plausible closure assumption, it can be shown that if $\mathcal{K}_\mathcal{A}\varphi$, $\mathcal{K}_\mathcal{A}\psi$.

3.1 (AK) from (SP1)

Let φ and ψ satisfy (SP1). '$\Box$' is a necessity modal all $\varrho \in \mathfrak{L}_S$, with this provisional interpretation (revised slightly in §4.2.3):

(L1) $[\![\Box\varrho]\!]^{c,w} = 1$ iff $\forall w'([\![\varrho]\!]^{c,w'} = 1)$

(4) and (5) together entail the relevant instance of AK.

(4) If $\mathcal{K}_\mathcal{A}\Box(\varphi \rightarrow \psi)$, then $\mathcal{K}_\mathcal{A}\varphi \rightarrow \mathcal{K}_\mathcal{A}\psi$

(5) $\mathcal{K}_\mathcal{A}\Box(\varphi \rightarrow \psi)$

[2] Except in cases where the presupposition is "locally accommodated." See §4.2 below.

[3] I won't argue here that they are garden-variety presuppositions – it is fairly clear that they are.

(4) is a plausible closure claim. Why? Let's assume (6) and suppose (7)-(8).

(6) $\mathcal{K}_{\mathcal{A}}(\{\varphi, \Box(\varphi \to \psi)\} \vdash \psi)$
(7) $\mathcal{K}_{\mathcal{A}}\Box(\varphi \to \psi)$
(8) $\mathcal{K}_{\mathcal{A}}(\varphi)$

Assuming the kind of epistemic closure defended in Williamson (2002), it seems one could have a knowledge-sufficient reason for ψ, consisting of one's knowledge-sufficient, a priori reasons for believing the things within the scope of the $\mathcal{K}_{\mathcal{A}}$ operators in (6)-(8). In other words, supposing (7) and (8), it seems possible to have a knowledge-sufficient, a priori reason for ψ. So, we have $\mathcal{K}_{\mathcal{A}}\psi$ and, thus, (4).

(5) is also plausible. Certainly, it can be *known* that $\Box(\varphi \to \psi)$. Let us provisionally[4] assume that:

(CN1) $[\![\varphi \to \psi]\!]^{c,w} = 1$ iff $[\![\psi]\!]^{c,w} = 1$, if $[\![\varphi]\!]^{c,w} = 1$

Therefore,
$[\![\Box(\varphi \to \psi)]\!]^{c,w} = 1$ iff $\forall w'([\![\psi]\!]^{c,w'} = 1$, if $[\![\varphi]\!]^{c,w'} = 1)$

But (since φ and ψ satisfy (SP1)), for all w', if $[\![\varphi]\!]^{c,w'}$ has *any value at all*, then $[\![\psi]\!]^{c,w'} = 1$. So, $\Box(\varphi \to \psi)$.

What needs to be shown is this: $\mathcal{K}_{\mathcal{A}}\Box(\varphi \to \psi)$. Here there is no knockdown argument.[5] But consider an example. Suppose that φ and ψ are the following sentences.

(φ) The king of France is bald.
(ψ) There is a unique king of France.

φ and ψ satisfy (SP1), and it is quite plausible in *this* case that $\mathcal{K}_{\mathcal{A}}\Box(\varphi \to \psi)$.

I can think of no cases of formulae satisfying (SP1) for which this general pattern of argument does not hold. This is not entirely unexpected. It does not seem unreasonable to *require as a condition of linguistic competence* that an agent know which conditions need to hold in a situation if her utterance is to be *evaluable for truth* with respect to that situation. Items of knowledge required for linguistic competence are generally taken to be items of a priori knowledge. This casts (5) in a plausible light.

3.2 (AK) from (SP2)

Let φ and ψ satisfy SP2, and let 'α' be a rigidifying 'actually' operator on all $\varrho \in \mathfrak{L}_S$, with this interpretation:

$[\![\alpha\varrho]\!]^{c,w} = 1$ iff $[\![\varrho]\!]^{c,@} = 1$
$\alpha\varrho \models \Box\alpha\varrho$

[4] This proposal is also revised later on (§4.2.2). The revisions slightly complicate the proofs given here and in the next section, but the results still hold.

[5] It turns out none is needed. All (SP1)-related uses of (AK) in this paper can be justified by the following argument.

(9) and (10) together entail the relevant instance of AK. (9) is justified by an analogue of the argument for the closure claim (4).

(9) If $\mathcal{K}_{\mathcal{A}}\Box\alpha(\varphi \to \psi)$, then $\mathcal{K}_{\mathcal{A}}\varphi \to \mathcal{K}_{\mathcal{A}}\psi$
(10) $\mathcal{K}_{\mathcal{A}}\Box\alpha(\varphi \to \psi)$

What about (10)? As before, it can certainly be *known* that $\Box\alpha(\varphi \to \psi)$. φ and ψ satisfy SP2, so, for any context c, if $[\![\varphi]\!]^c$ is defined, then $[\![\psi]\!]^{c,w_c} = 1$. But if $[\![\varphi]\!]^{c,w}$ is defined, then so is $[\![\varphi]\!]^c$. So, if $[\![\varphi]\!]^{c,w} = 1$, then $[\![\psi]\!]^{c,w_c} = 1$. Let @ be the actual world and $c_@$ be any context located in @. So, if $[\![\varphi]\!]^{c_@,@} = 1$, then $[\![\psi]\!]^{c_@,@} = 1$. Then $[\![\varphi \to \psi]\!]^{c_@,@} = 1$. But then $\alpha(\varphi \to \psi)$, hence $\Box\alpha(\varphi \to \psi)$.

What needs to be shown is this: $\mathcal{K}_{\mathcal{A}}\Box\alpha(\varphi \to \psi)$. Here, again, there is no knock-down argument, though an example is illustrative.[6] Suppose that φ and ψ are the following sentences.

(φ) Julius is the inventor of the zip. (*or*, Julius is dead in 1909.)
(ψ) There is a unique inventor of the zip.

As argued in §2, φ and ψ satisfy SP2. Moreover, it seems in this case quite plausible that $\mathcal{K}_{\mathcal{A}}\Box\alpha(\varphi \to \psi)$, assuming for simplicity that the stipulative definition of 'Julius' occurs in @.

More generally, it seems reasonable to require as a condition of linguistic competence that an agent have an a priori grasp of which conditions actually need to hold in a context if her utterance is to *express a proposition* at that context. This casts (10) in a plausible light.

4 Application

4.1 Analyticity

It is natural to think that it is knowable a priori that the queen of England is a queen of England, or that the queen of England is self-identical. But if the lexical proposals for $[\![\textit{the}]\!]^{c,w}$ described in §2 are correct, this cannot be. According to these proposals, (11) and (12) bear the semantic presupposition that (13).

(11) The queen of England is a queen of England.
(12) The queen of England is the queen of England.
(13) There is a unique queen of England.

But it's false that $\mathcal{K}_{\mathcal{A}}(13)$. Interestingly, then, (AK) potentially makes the a priori knowability of certain claims crucially dependent on the fate of certain theses in

[6] As before, all SP2-related uses of (AK) in this paper can be justified by this argument.

natural language semantics (in this case, a popular semantics for the definite determiner).[7]

This is slightly surprising, since (11) and (12) are (natural language) instances of the following logical truths. (14) is provable in a classical first-order logic with '$\imath$', while (15) is provable in *any* first-order logic with identity-introduction for terms, in which $\ulcorner \imath x A \urcorner$ is a term, for any open formula A.

(14) $P(\imath x P(x))$
(15) $\imath x P(x) = \imath x P(x)$

This is sufficient to make (11) and (12) *analytic*, according to some characterizations of analyticity, e.g., Boghossian's "Frege-Analyticity" (Boghossian, 1996). (AK) thus seems to provide a new template for generating examples of the analytic a posteriori.

4.2 Filtering

There *is* a point to the clause of (SP) requiring that semantic presuppositions be garden-variety presuppositions (though we haven't yet seen it). Because semantic presuppositions are garden-variety presuppositions, they can be *syntactically filtered* (locally accommodated) under certain kinds of embedding. Because of (AK), presupposition-filtering has epistemological implications.

4.2.1 Conditionals

Say that φ (garden-variety) presupposes that $\psi_1, ..., \psi_n$. If, for all $i, 1 \leq i \leq n$, $\varrho \models \psi_i$, there is a salient reading of (16) that does *not* presuppose (or otherwise imply) that ψ_i, for any $i, 1 \leq i \leq n$.[8] (17) gives a simple example.

(16) $\varrho \rightarrow \varphi$
(17) If there is a unique king of France, the king of France is male.

Such readings of such conditionals are known as "local accommodation" readings.[9] Thus, while $\neg\mathcal{K}_{\mathcal{A}}$(11), if we *filter (11)'s presupposition* that (13) – as in (18) – we achieve something that (AK) does not (obviously, anyway) claim to be knowable only a posteriori.

(11) The queen of England is a queen of England.
(13) There is a unique queen of England.
(18) (13) $\rightarrow$ (11)

[7] However, Russellianism about definite descriptions does not avoid these results, since Russellianism, if anything, makes it *more* plausible that $\mathcal{K}_{\mathcal{A}}\Box$[(11) $\rightarrow$ (13)]. According to the Russellian, (11)'s *meaning* is given by a conjunction, one of whose conjuncts is (13).

[8] Many people assume that conditionals presuppose that their antecedents are *possible* with respect to the conversational context. Since this will not count as a semantic presupposition, we can safely ignore it.

[9] See Heim (1991). It's generally agreed that any presupposition of a conditional's *antecedent* must be borne by the entire conditional.

Interestingly, philosophers working on the a priori have a fairly systematic tendency to filter out a posteriori presuppositions in exactly this way. To my knowledge, however, none construe what they are doing *as* presupposition-filtering. (AK) can explain this tendency, in a very tidy way. Evans (1985) and Hawthorne (2002), for example, do not cite (3) as an example of the contingent a priori, but rather (19).

(3) Julius invented the zip.
(19) If anyone uniquely invented the zip, Julius invented the zip.

This is the standard reaction to the original argument for the contingent a priori. Evans, for his part, writes that (3) "requires for its truth something which ... [(19)] does not, namely that someone did uniquely invent the zip, and *since this cannot be known a priori, neither can [(3)]*" (Evans, 1985, 193). There is, of course, a gap in this argument, which (AK) and (SP) fill in nicely.

4.2.2 Projection

Projection is the flipside of local accommodation; presuppositions (including semantic ones!) *project* out of embedded constructions if they are not locally accommodated. We thus predict (correctly, I suggest) that $[\![(20)]\!]^c$ is undefined over any w where there is not a unique king of France, and that $[\![(21)]\!]$ is undefined over any c such that no one uniquely invented the zip in c's world.

(20) #If the king of France is bald, he doesn't own a comb.
(21) #If Julius died in 1909, he knew of McKinley's assassination.

This is contradicted by (CN1):

(CN1) $[\![\varphi \to \psi]\!]^{c,w} = 1$ iff $[\![\psi]\!]^{c,w} = 1$, if $[\![\varphi]\!]^{c,w} = 1$

(CN1) should be amended, as follows. This is still a toy proposal, but one consonant with the projection facts about semantic presuppositions.[10]

(CN2) $[\![\varphi \to \psi]\!]^{c,w} = 1$ iff:

(1) $[\![\psi]\!]^{c,w} = 1$, if $[\![\varphi]\!]^{c,w} = 1$

(2) For any semantic presupposition that ϱ of either φ or ψ, either ϱ is locally accommodated or (globally) satisfied.

If ϱ is an (SP1)-presupposition, ϱ is globally satisfied iff $[\![\varrho]\!]^{c,w} = 1$. If ϱ is an (SP2)-presupposition, ϱ is globally satisfied iff $[\![\varrho]\!]^{c,w_c} = 1$.

Since there is nothing *in* a conditional to locally accommodate the presupposition

[10] The proposal should be read as neutral about whether '$\to$' indicates a material or indicative conditional. I assume, somewhat controversially, that projection phenomena in material conditionals mirror projection phenomena in indicatives.

(that ϱ) of its antecedent (φ), the conditional must be embedded under something else for φ's presuppositions to be locally accommodated. If the conditional is *unembedded*, its semantic presuppositions must be globally satisfied for the conditional to be true. There are two important epistemological upshots here.

(E1) If $\ulcorner\varphi \to \psi\urcorner$ is unembedded and ψ semantically presupposes that ϱ, then if ϱ is not locally accommodated by φ, $\mathcal{K}_{\mathcal{A}}(\varphi \to \psi)$ only if $\mathcal{K}_{\mathcal{A}}\varrho$.

(E2) If $\ulcorner\varphi \to \psi\urcorner$ is unembedded and φ semantically presupposes that ϱ, then $\mathcal{K}_{\mathcal{A}}(\varphi \to \psi)$ only if $\mathcal{K}_{\mathcal{A}}\varrho$.

4.2.3 Modals

(E2) is no problem for my claims (in §§3.1 − 2) that $\mathcal{K}_{\mathcal{A}}(22)$ and $\mathcal{K}_{\mathcal{A}}(23)$, even though the conditionals here carry semantic presuppositions whose truth cannot be known a priori.

(22) $\Box$(if the king of France is bald, there is a unique king of France)
(23) $\Box\alpha$(if Julius is dead in 1909, someone uniquely invented the zip)

These conditionals are *embedded* under modal operators. Quantificational adverbs (and their logical counterparts) can (within limits) locally accommodate presuppositions of sentences over which they take scope (see Geurts, 1997, 18). The modal operator in, e.g., (22) makes available a *de dicto* (local accommodation) reading of 'the king of France.' This is obvious enough, since (22) (or a natural language analogue thereof) is perfectly assertable at contexts where it's common ground that France is not a monarchy, while (20) is not.

There's a related worry about how to predict a true reading of (22), given that there are worlds at which the embedded conditional is neither true nor false. This problem and '$\Box$''s ability to filter semantic presuppositions demand a revision of (L1).

(L1) $[\![\Box\varphi]\!]^{c,w} = 1$ iff $\forall w'([\![\varphi]\!]^{c,w'} = 1)$

Let ψ be a conjunction of φ's (SP1)-presuppositions[11] that are locally accommodated by '$\Box$', and $\mathfrak{D}^{\psi}_{w} = \{w' : [\![\psi]\!]^{c,w'} = 1\}$

[11] *Not* φ's SP2-presuppositions, unless we want sentences like '$\Box$(if Julius died in 1909, someone invented the zip)' to come out true! (Actually, I do think there is *a* true reading of this sentence, but I won't press the point here.)

(L2) $[\![\Box\varphi]\!]^{c,w} = 1$ iff:

(1) $\mathfrak{D}^{\psi}_{w} \neq \emptyset$

(2) $\forall w' \in \mathfrak{D}^{\psi}_{w}([\![\varphi]\!]^{c,w'} = 1)$

(3) For any semantic presupposition ϱ of φ, either ϱ is locally accommodated or (globally) satisfied.

Clause (1) prevents sentences like (24) from being vacuously true.

(24) $\Box$(Both queens of England are the queen of England)

Clause (2) mirrors accounts for the truth of sentences like $\ulcorner\Box a = a\urcorner$ and $\ulcorner\Box P(a)\urcorner$, where $\ulcorner a\urcorner$ is a singular term and P is an essential property of a. $\ulcorner\Box P(a)\urcorner$ is generally held to true iff $P(a)$ at every world where a exists (*not* at every world simpliciter). It thus predicts true readings of (22), (25), (26).

(25) $\Box$(The queen of England is a queen of England)
(26) $\Box$(The queen of England is the queen of England)

Finally, clause (3) handles both local accommodation and projection, without proposing any substantive constraint on the kinds of presuppositions that '$\Box$' *can* or *must* locally accommodate.[12] So it (correctly) leaves open the possibility for *projection* readings[13] of expressions occurring (at surface form, SF) within the modal's scope, e.g., a *false* reading of (25), with roughly the logical form (LF) given in (25_l). It also predicts (correctly) that there is no true reading of (27) on which 'the king of France' is given a projection (*de re*) reading, as in (27_l); on such a reading, the semantic presupposition of the definite description is neither locally accommodated nor globally satisfied. ('t_i' is a trace recording LF-movement of an NP $[_{\text{NP}}\ \mu]_i$ out of SF-position, such that $[\![t_i]\!]^{c,w} = [\![[_{\text{NP}}\ \mu]_i]\!]^{c,w}$)

(25_l) [the queen of England]$_i$ [$\Box$(t_i is a queen of England)]
(27) $\Box$(the king of France is male)
(27_l) [the king of France]$_i$ [$\Box$(t_i is male)]

More generally, suppose that some syntactic item β semantically presupposes that ϱ. Projection readings of presupposition carriers are just non-local accommodation readings. So, given a sentence $\varphi = [_{\text{S}}\ ...\beta...]$, if the relevant reading of β in φ is a projection reading, φ semantically presupposes that ϱ.

[12] I do assume, however, that (i) '$\Box$' is able to filter the presuppositions of the embedded conditionals in (22) and (23), and (ii) a presupposition-carrier β must *scope over* a possible presupposition-filter ϱ at LF to block local accommodation of β's presuppositions by ϱ.

[13] Otherwise known as *de re*, referential, or wide-scope readings.

4.3 Necessary A Posteriori

Before exploring the epistemological implications of filtering and projection, I want to argue that proper names bear (SP1)-presuppositions, by way of giving a Kripkean-friendly resolution of an old puzzle about proper names. The puzzle is this. Assume a basic Kripkean semantics for names, so that 'Cicero' and 'Tully' are co-intensional, in the sense below.

$$f = [\![\mathit{Cicero}]\!]^c = \lambda w\,.\,\text{Cicero}$$

$$g = [\![\mathit{Tully}]\!]^c = \lambda w\,.\,\text{Tully}$$

$$\beta \text{ and } \beta' \text{ are co-intensional} =_{\text{df}} [\![\beta]\!]^c = [\![\beta']\!]^c$$

This semantics conjoined with two plausible assumptions about a priori access to semantic facts entails an absurdity.[14]

1. If $[\![\beta]\!]^c = h$, then $\mathcal{K}_{\mathcal{A}}[\![\beta]\!]^c = h$. (Meaning Apriorism I)
2. So, $\mathcal{K}_{\mathcal{A}}[\![\mathit{Cicero}]\!]^c = f$, and $\mathcal{K}_{\mathcal{A}}[\![\mathit{Tully}]\!]^c = g$. (1)
3. So, $\mathcal{K}_{\mathcal{A}}[\![\mathit{Cicero}]\!]^{c,w} = \text{Cicero}$, and $\mathcal{K}_{\mathcal{A}}[\![\mathit{Tully}]\!]^{c,w} = \text{Tully}$. (2)
4. If β and β' are co-intensional, $\mathcal{K}_{\mathcal{A}}([\![\beta]\!]^c = [\![\beta']\!]^c)$. (Meaning Apriorism II)
5. So, $\mathcal{K}_{\mathcal{A}}[\![\mathit{Cicero}]\!]^c = [\![\mathit{Tully}]\!]^c$. (4)
6. So, $\mathcal{K}_{\mathcal{A}}\text{Cicero=Tully}$. (3), (5)

This argument is a *reductio* of one of its assumptions. Many meaning apriorists[15] embrace the two meaning apriorist assumptions while rejecting the Kripkean semantics wholesale.

But this is too hasty. Geurts (1997) has convincingly argued that an occurrence of a proper name ϵ (garden-variety) presupposes that $\exists! x[\Delta(\epsilon, x)]$ (where '$\Delta(\epsilon, e)$' expresses a *designation* relation between a name ϵ and an entity e).[16] It is plausible that this presupposition is an (SP1) semantic presupposition.

Consider the sentence 'Cicero authored *De Finibus*'. What truth-value does this sentence have at worlds where 'Cicero' fails to designate a unique entity? The same truth-value, I suggest, that 'the king of France is bald' has at worlds where there is no unique king of France, i.e., *no truth-value at all*. This suggests that the world-evaluable content of proper names is partial in precisely the way that $[\![\mathit{the}\ P]\!]^c$ is partial:

$$[\![\epsilon]\!]^c = \lambda w : [\![\ulcorner \exists! x[\Delta(\epsilon, x)] \urcorner]\!]^{c,w} = 1\ .\ \iota y[\Delta(\epsilon, y) \text{ in } c]$$

[14] I rely on a closure assumption about '$\mathcal{K}_{\mathcal{A}}$' here and throughout this argument, which I won't bother making explicit.

[15] E.g., some two-dimensionalists. See Braddon-Mitchell (2004).

[16] Swanson (2006) shows, contra Geurts, that this fact is compatible with a Kripkean semantics for proper names.

This is consistent with the spirit of a Kripkean semantics for proper names. Though a name ϵ will not rigidly designate its referent at every world *simpliciter*, it will rigidly designate it at all (and only) those worlds where something can lay unique claim to being designated by ϵ. Compare the commonplace view that rigid designation by ϵ of e requires only that ϵ designate e at all (and only) those worlds where e exists.

Letting χ = '$\exists!x[\Delta(\mathit{Cicero}, x)$', τ = '$\exists!x[\Delta(\mathit{Tully}, x)]$', we therefore have:

$$[\![\mathit{Cicero}]\!]^c = \lambda w : [\![\chi]\!]^{c,w} = 1 \text{ . Cicero}$$

$$[\![\mathit{Tully}]\!]^c = \lambda w : [\![\tau]\!]^{c,w} = 1 \text{ . Tully}$$

The sentence 'Cicero=Tully' will therefore (SP1)-presuppose both that χ and that τ. Since it cannot be known a priori that a (use of a) name (in a given context) designates one (and only one) entity, we have that $\neg\mathcal{K}_{\mathcal{A}}\chi$ and $\neg\mathcal{K}_{\mathcal{A}}\tau$, and, therefore, that $\neg\mathcal{K}_{\mathcal{A}}$Cicero=Tully.[17] There is nothing in this explanation of the a posteriori status of 'Cicero is Tully' that the Kripkean should hesitate to embrace. It has the added advantage of being well-motivated, wholly independently of the Kripkean semantics.

4.4 Contingent A Priori

The following facts – argued for in preceding sections – conspire to create trouble for certain arguments for the contingent a priori.

(F1) If $\ulcorner\varphi \rightarrow \psi\urcorner$ is unembedded and ψ semantically presupposes that ϱ, then if ϱ is not locally accommodated by φ, $\mathcal{K}_{\mathcal{A}}(\varphi \rightarrow \psi)$ only if $\mathcal{K}_{\mathcal{A}}\varrho$.

(F2) Given a sentence $\varphi = [_{\mathrm{S}} \ldots\beta\ldots]$, if β semantically presupposes that ϱ and the relevant reading of β in φ is a projection reading, φ semantically presupposes that ϱ.

(F3) A proper name ϵ carries the semantic presupposition that $\exists!x[\Delta(\epsilon, x)$.

Let ζ_1 = '$\exists!x[\mathit{invented\ the\ zip}(x)]$', and ζ_2 = '$\exists!x[\Delta(\mathit{Julius}, x)]$'. I have argued that 'Julius' (and therefore 'Julius invented the zip') bears an (SP2)-presupposition that ζ_1. But, in view of (F3), it also bears an (SP1)-presupposition that ζ_2. Since $\neg\mathcal{K}_{\mathcal{A}}\zeta_1$ and $\neg\mathcal{K}_{\mathcal{A}}\zeta_2$, $\mathcal{K}_{\mathcal{A}}$(19) only if (19)'s consequent's presupposition that $\zeta_1 \wedge \zeta_2$ is locally accommodated by its antecedent. But it isn't (since $\zeta_1 \nvDash \zeta_1 \wedge \zeta_2$), so $\neg\mathcal{K}_{\mathcal{A}}$(19). (28), however, does better.

[17] This is only part of the story, however. We will still want to know why it cannot be known a priori that $\chi \wedge \tau \rightarrow$ Cicero=Tully. See my (2008) for a solution.

(19) If anyone uniquely invented the zip, Julius invented the zip.

(28) If anyone uniquely invented the zip and 'Julius' uniquely designates him, Julius invented the zip.

The problem with (28) is that genuine local accommodation (*de dicto*) readings of definite NPs are *non-referential* in character[18] – see, for instance, (27), (29), and the suggested (Discourse Representation Theoretic) glosses.

(27) $\Box$(the king of France is male) $\approx$
$\Box[[\boldsymbol{x}\text{: unique king of France}(x)] \Rightarrow [\text{male}(x)]]$

(29) If there's a unique king of France, the king of France is male $\approx$
$[\boldsymbol{x}\text{: unique king of France}(x)] \Rightarrow [\text{male}(x)]$

Roughly speaking, in evaluating (27), we *conditionally* introduce[19] a discourse referent $\boldsymbol{x}$ representing the unique king of France in a world w and consider whether the individual the model assigns to $\boldsymbol{x}$ at w is male. We accept (27) as true if, for all w, if an individual is assigned to $\boldsymbol{x}$ at w, the individual is male. Likewise, minus the quantification over worlds, for (29).

When interpretation of a definite NP δ bearing the presupposition that ψ is tied to a conditionally introduced discourse referent containing the information that ψ, we will say that δ is given a *bound reading*. Proper names admit of bound readings, as (30) demonstrates. Precisely the same phenomenon can be seen to occur in (28), when 'Julius' is given a bound reading.

(30) If there's a tastiest pie and 'Ed' names it, then Ed is a pie $\approx$
$[\boldsymbol{y}\text{: tastiest pie}(y) \wedge \text{named by 'Ed'}(y)] \Rightarrow [\text{pie}(y)]$

(28) If anyone uniquely invented the zip and 'Julius' uniquely designates him, Julius invented the zip $\approx$
$[\boldsymbol{z}\text{: uniquely invented the zip}(z) \wedge \text{uniquely designated by 'Julius'}(z)] \Rightarrow [\text{invented the zip}(z)]$

Clearly, however, this does *not* give a contingent reading of (28).

The culprit here is local accommodation, which is to say that the contingent reading of (28) can only be gotten by giving 'Julius' a projection (*de re*) reading. Let '(28_p)' designate a disambiguated sentence giving a contingent reading of (28). By (F2), (28_p) semantically presupposes that $\zeta_1 \wedge \zeta_2$. So, by (F1), $\mathcal{K}_{\mathcal{A}}(28_p)$ only if $\mathcal{K}_{\mathcal{A}}(\zeta_1 \wedge \zeta_2)$. But $\neg\mathcal{K}_{\mathcal{A}}(\zeta_1 \wedge \zeta_2)$, so $\neg\mathcal{K}_{\mathcal{A}}(28_p)$.

[18] The explanation for this is clear enough – when we use a definite NP referentially, *we* presuppose that there is something for the definite NP to designate or refer to.

[19] Conditional introduction means that the discourse referent does not become part of the basic Discourse Representation Structure. So long as 'the king of France' is read *de dicto*, utterances of (27) and (29) neither require nor make it the case that it is common ground that there is a unique king of France.

In general, then, since for any disambiguated sentence φ giving a contingent reading of (28), φ will semantically presuppose that $\zeta_1 \wedge \zeta_2$, there is no contingent a priori reading of (28).

4.5 Knowledge of Logic

At first blush, stipulative definitions may seem to generate easy a priori knowledge. But a priori knowledge turns out not to be so easy, as we've just seen. Utilizing the fact that stipulative definitions involve (SP2)-presuppositions, I'll argue that (AK) is able to make trouble certain arguments for a priori knowledge of logic. Here, as before, the trouble has not gone unnoticed by others,[20] though the ultimate source of the trouble – the phenomenon of semantic presupposition, and the epistemic commitments generated thereby – has.

Suppose you were inclined to attempt to ground a priori knowledge of these general logical truths, by means of the following argument.[21]

$(\wedge E_1)$ $(P \wedge Q) \rightarrow P$
$(\wedge E_2)$ $(P \wedge Q) \rightarrow Q$
$(\wedge I)$ $P \rightarrow (Q \rightarrow (P \wedge Q))$

Let $\mathbf{A} = \{(\wedge E_1), (\wedge E_2), (\wedge I)\}$. Argument: we *stipulate* that '$\wedge$' shall have whatever connective-appropriate meaning makes each conditional in $\mathbf{A}$ logically true, i.e., true under any propositional interpretation of P and Q. Having settled on this meaning for '$\wedge$' by fiat, we automatically place ourselves in a position to know (a priori) that, e.g., $(\wedge E_1)$ is true (for all P and Q).

It's clear, however, that $(\wedge E_1)$, $(\wedge E_2)$, and $(\wedge I)$ (and all instances thereof) each bear the (SP2)-presupposition that ς.

$$(\varsigma) \qquad \exists\, \mathfrak{F} : \text{`}\wedge\text{' means } \mathfrak{F} \text{ and } \begin{bmatrix} \ulcorner (P\ \mathfrak{F}\ Q) \rightarrow P \urcorner \\ \ulcorner (P\ \mathfrak{F}\ Q) \rightarrow Q \urcorner \\ \ulcorner P \rightarrow (Q \rightarrow (P\ \mathfrak{F}\ Q)) \urcorner \end{bmatrix} \text{ are logically true.}$$

For any $\neg\varsigma$ context c, if '$\wedge$''s definition were (*per impossibile*) to occur in c, $(\wedge E_1)$ would fail to express a proposition in c. So, if $[\![(\wedge E_1)]\!]^c$ is defined, actually ς. Therefore, if $\mathcal{K}_{\mathcal{A}}(\wedge E_1)$, then $\mathcal{K}_{\mathcal{A}}\varsigma$. In other words, if it's false that $\mathcal{K}_{\mathcal{A}}\varsigma$, then it's false that $\mathcal{K}_{\mathcal{A}}(\wedge E_1)$.

Since we are, inter alia, interested in *grounding* a priori knowledge of $(\wedge E_1)$, we will want to take extra care to rule it out that $\neg\mathcal{K}_{\mathcal{A}}\varsigma$, i.e., to rule it *in* that $\mathcal{K}_{\mathcal{A}}\varsigma$. As it stands, we could do this two ways. First, we could infer that $\mathcal{K}_{\mathcal{A}}\varsigma$ from, e.g., $\mathcal{K}_{\mathcal{A}}(\wedge E_1)$. But, of course, it's illicit to assume that $\mathcal{K}_{\mathcal{A}}(\wedge E_1)$ for this purpose, since this is precisely what we're attempting to establish.

Alternatively, we could try to make it independently plausible that $\mathcal{K}_{\mathcal{A}}\varsigma$. But any argument along these lines would also be, *a fortiori*, an argument that $\mathcal{K}_{\mathcal{A}}(\wedge E_1)$. Far

[20] See, e.g., Horwich (2000) for a line of attack similar in spirit to the one developed here.
[21] Boghossian (1996) and Hale and Wright (2000) are some prominent proponents of roughly this kind of argument.

from alleviating the problem of grounding a priori knowledge of the logical truths in **A**, it seems we've only managed to restate it.

To their credit, Hale and Wright (2000) seem to be aware of a problem in this general vicinity. They argue (convincingly) that a stipulation that φ cannot *by itself* yield any sort of knowledge unless it can be known that φ "without collateral ... epistemic work" (Hale and Wright, 2000, 297). One cannot, for example, know that (31) solely via stipulating that (31), since knowledge that (31) requires that one do collateral epistemic work to verify that there is a (unique) such murderer. No such collateral epistemic work is required for knowledge that (32), they claim.

(31) Jack the Ripper is the murderer of Mary Ann Nichols.

(32) If there's a unique murderer of Mary Ann Nichols, Jack the Ripper is the murderer of Mary Ann Nichols.

Notice that, in the case of (31), the requisite "collateral" item of knowledge is the (SP1)-presupposition of the definite NP 'the murderer of Mary Ann Nichols'. With (AK) in hand, we have a clear explanation of why (31) requires such collateral epistemic work, and of why (32) does better – the relevant presupposition is locally accommodated.[22]

Hale and Wright draw the wrong lesson from this case, however: that embedding a bare sentence $F(a)$ containing a stipulatively defined term 'a' in an *unasserted* environment (e.g., $\ulcorner F(a) \rightarrow \psi \urcorner$ or $\ulcorner \psi \rightarrow F(a) \urcorner$) suffices to neutralize any demand for collateral knowledge *that the world cooperates* in putting forth a suitable meaning for 'a'. So, one need not be able to know (a priori) that ς in order to know (a priori) that $(\wedge E_1)$, that $(\wedge E_2)$, or that $(\wedge I)$, since, in all of these cases, '$\wedge$' occurs in the antecedent or consequent of a conditional. This, however, is mistaken. Semantic presuppositions project out of unasserted environments unless they are locally accommodated. Because '$\wedge$' bears the (SP2)-presupposition that ς, and because nothing in $(\wedge E_1)$, $(\wedge E_2)$, or $(\wedge I)$ is up to locally accommodating this presupposition, all of these conditionals semantically presuppose that ς, and so none are knowable a priori unless it is knowable a priori that ς. But then (for reasons already sketched) we will incur an obligation to make it independently plausible that $\mathcal{K}_{\mathcal{A}}\varsigma$, and thereby have made no headway in the project of grounding a priori knowledge of logic at all.

5 Conclusion

As I hope I've shown, research into the possibilities for certain sorts of a priori knowledge would benefit from close attention to the linguistic phenomenon of semantic presupposition. We've seen that (AK) has a rather wide range of application. This leads one to wonder whether (AK) might be usefully applied to other longstanding questions about the a priori. I would personally be surprised if it could not.

[22] I'm ignoring the semantic presupposition of 'Jack the Ripper' for simplicity's sake.

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