Schlenker 2006

For Schlenker (like Heim and Stalnaker), the problem of projection is the following:

Given an atomic sentence, S, with presupposition p (henceforth S_p), define constraints on the CG for the assertion of various sentences that dominate S.

1. Generalization

(1) Schlenker's Generalization: A sentence, X, that dominates S_p[1] is assertable in a context C iff, $X[S_p/p \wedge S_p]$ is not assertable in C.

Evidence:

(2) Context: Mary just announced that she is pregnant.
Mary's Husband:
a. ?She is pregnant and she is happy about the fact that she is pregnant.
b. She is happy about the fact that she is pregnant.

(3) a. ?If Mary is pregnant, she is pregnant and she knows that she is pregnant.
b. If Mary is pregnant, she knows that she is pregnant.

(4) a. ?Mary is pregnant and she is pregnant and she knows that she is pregnant.
b. Mary is pregnant and she knows that she is pregnant.

2. Proposal-first version[2]

Schlenker's Generalization is entirely expected in Heim's framework (Schlenker pc). However, Schlenker observes that one can have a predictive statement of the environments in which $X[S_p/p \wedge S_p]$ is not assertable, and subsequently a predictive statement of the projection properties.

(5) Constraint on Conjunction (version 1)
A sentence, X, which dominates $p \wedge q$, is not assertable in C if:

$\forall r\ [X[p \wedge q/\ p \wedge r] \Leftrightarrow_C X[p \wedge q/\ r]]$ (the first conjunct is idle no matter what the second conjunct is)

Let's see how this deals with a few basic cases

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[1] and does not dominate other presupposition bearing atomic sentences. The more general statement is the following:

(i) A sentence, X, that dominates a set of presupposition triggers $S^i{}_p i$s is assertable in a context C iff, for every i, $X[S^i{}_p i/p^i \wedge S^i{}_p i]$ is not assertable in C.

[2] What I present is the proposal developed in sections 4.2.-5.1 ("Global Presuppositional Transparency"), rather than the proposal presented in greater detail at the beginning of the paper ("Incremental Presuppositional Transparency").

3. Some of Heim's Results

3.1. Unembedded S_p

S_p is assertable in C iff $p \wedge S_p$ is unassertable in C.
$p \wedge S_p$ is unassertable in C (given (5)), iff $[p \wedge r] \Leftrightarrow_C r$, for any choice of r, i.e., iff $C \Rightarrow p$.
Hence S_p will presuppose p.

3.2. $\neg S_p$

$\neg S_p$ is assertable in C iff $\neg[p \wedge S_p]$ is unassertable in C.
$\neg[p \wedge S_p]$ is unassertable in C (given (5)), iff $\neg[p \wedge r] \Leftrightarrow_C \neg r$, for any choice of r, i.e., iff $C \Rightarrow p$. Hence $\neg S_p$ will presuppose p.

3.3. $S_1 \wedge S_p$

$S_1 \wedge S_p$ is assertable in C iff $S_1 \wedge (p \wedge S_p)$ is unassertable in C.
$S_1 \wedge (p \wedge S_p)$ is unassertable in C (given (5)), iff $S_1 \wedge (p \wedge r) \Leftrightarrow_C S_1 \wedge r$, for any choice of r, i.e., iff $C \wedge S_1 \Rightarrow p$.
Hence $S_1 \wedge S_p$ will presuppose $S_1 \rightarrow p$.

3.4. $S_1 \rightarrow S_p$

$S_1 \rightarrow S_p$ is assertable in C iff $S_1 \rightarrow (p \wedge S_p)$ is unassertable in C.
$S_1 \rightarrow (p \wedge S_p)$ is unassert. in C (given (5)), iff $S_1 \rightarrow (p \wedge r) \Leftrightarrow_C S_1 \rightarrow r$, for any choice of r, i.e., iff $C \wedge S_1 \Rightarrow p$.
Hence $S_1 \rightarrow S_p$ will presuppose $S_1 \rightarrow p$.

4. Symmetry in Disjunction

4.1. $S_1 \vee S_p$

$S_1 \vee S_p$ is assertable in C iff $S_1 \vee (p \wedge S_p)$ is unassertable in C.
$S_1 \vee (p \wedge S_p)$ is unassertable in C (given (5)), iff $S_1 \vee (p \wedge r) \Leftrightarrow_C S_1 \vee r$, for any choice of r, i.e., iff $C \wedge \neg S_1 \Rightarrow p$.
Hence $S_1 \vee S_p$ will presuppose $\neg S_1 \rightarrow p$.

This seems to be a good result:

(6) Either this house has no bathroom, or the bathroom is well hidden.

4.2. $S_p \vee S_1$

$S_p \vee S_1$ is assertable in C iff $(p \wedge S_p) \vee S_1$ is unassertable in C.
$(p \wedge S_p) \vee S_1$ is unassertable in C (given (5)), iff $(p \wedge r) \vee S_1 \Leftrightarrow_C r \vee S_1$, for any choice of r, i.e., iff $C \wedge \neg S_1 \Rightarrow p$.
Hence $S_p \vee S_1$ will presuppose $\neg S_1 \rightarrow p$.

This also seems to be good result:

(7) Either the bathroom is well hidden, or there is no bathroom.

5. $[\neg S_p] \rightarrow S_1$

$[\neg S_p] \rightarrow S_1$ is assertable in C iff $[\neg(p \wedge S_p)] \rightarrow S_1$ is unassertable in C.
$[\neg(p \wedge S_p)] \rightarrow S_1$ is unassertable in C (given (5)), iff $[\neg(p \wedge r)] \rightarrow S_1 \Leftrightarrow_C [\neg r] \rightarrow S_1$, for any choice of r, i.e., iff $[\neg S_1 \rightarrow (p \wedge r)] \rightarrow \Leftrightarrow_C [\neg S_1 \rightarrow r]$, i.e., iff $C \wedge \neg S_1 \Rightarrow p$.

Hence $[\neg S_p] \rightarrow S_1$ will presuppose $\neg S_1 \rightarrow p$ (i.e, the same presupposition as that of a disjunction of S_p or S_1).

This presupposition is radically different from that of Heim, and Philippe presents evidence in its support:

(8) a. If Mary is pregnant, her doctor knows that she is pregnant.
b. If Mary's doctor doesn't know that she is pregnant, she isn't pregnant.

We want to generalize these results. Schlenker discusses this in a separate paper that I haven't read…A naïve first step:

6. $\neg A$ when A presupposes p and dominates a single atomic S_q.

A presupposes p. Hence $A[S_q/q \wedge S_q]$ is unassertable in C iff $C \Rightarrow p$. Given (5), $C \Rightarrow p$ iff for any choice of r $A[S_q/q \wedge r] \Leftrightarrow_C A[S_q/r]$. Since $X \Leftrightarrow_C Y$ iff $\neg X \Leftrightarrow_C \neg Y$, we derive

$C \Rightarrow p$ iff for any choice of r $\neg A[S_q/q \wedge r] \Leftrightarrow_C \neg A[S_q/r]$. I.e., we derive that $\neg A$ presupposes p.

Homework (optional): see what happens with the other connectives, and when you allow for more than one presupposition trigger ☺

7. Symmetry in Conjunction?

$S_p \wedge S_1$: $S_p \wedge S_1$ is assertable in C iff $(p \wedge S_p) \wedge S_1$ is unassertable in C.
$(p \wedge S_p) \wedge S_1$ is unassertable in C (given (5)), iff $(p \wedge r) \wedge S_1 \Leftrightarrow_C r \wedge S_1$, for any choice of r, i.e., iff $C \wedge S_1 \Rightarrow p$.

This doesn't seems to be good result: $\#S_p \wedge p$

(9) #The king of France is bald and France has a king.

8. Proposal

(10) Constraint on Conjunction (version 2)
A sentence, X, that dominates $p \wedge q$ is not assertable in C if one of the following holds:
a. $\forall r\, [X[p \wedge q/\ p \wedge r] \Leftrightarrow_C X[p \wedge q/\ r]]$ (the first conjunct is idle no matter what the second conjunct is)
b. $[X[p \wedge q] \Leftrightarrow_C X[p \wedge q/\ p]]$ (the second conjunct is idle given the first conjunct)

9. Further Evidence

9.1. No presupposition when $p \Rightarrow S_p$

(11) a. The king of France exists.
b. ?France has a king and the king of France exists

(12) a. The king of France doesn't exist.
b. ?It's not the case that France has a king and the king of France exists

9.2. $S_p \wedge S_1$ where S_1 is more informative than p.

(13) a. I can tell you that John knows he is sick and that he has cancer.
b. Is it true that John knows he is sick and that he has cancer?
c. It's not the case that John knows he is sick and that he has cancer.

10. Disjunction (potential problem)

(14) Either this house has no bathroom, or it has a bathroom and the bathroom is well hidden. (Schlenker pc, attributing to Heim pc)

We get the right projection for disjunction based on our constraints on conjunction, but the constraints on conjunction seem to give the wrong results.

Basic fact

$(p \vee q) \Leftrightarrow (p \vee ([\neg p] \wedge q))$

Could we capitalize on the following fact?

$\neg[(p \nabla q) \Leftrightarrow (p \nabla ([\neg p] \wedge q))]$

See our discussion of Hurford's constraint.

11. Quantification

11.1 Q A [λx.[B(x)]$_{p(x)}$].

Universal Quantifiers

(15) a. Every one of these ten boys drives his car to school.
b. At least one of these ten boys drives his car to school.

(16) Every A [λx.[B(x)]$_{p(x)}$].
For transparency we will write
$\forall x[A(x) \rightarrow B_p(x)]$

$\forall x[A(x) \rightarrow B_p(x)]$ is assertable in C iff $\forall x[A(x) \rightarrow \mathit{p(x)} \wedge B_p(x)]$ is unassertable in C.
$\forall x[A(x) \rightarrow p(x) \wedge B_p(x)]$ is unassertable in C (given (5)), iff
$\forall x[A(x) \rightarrow p(x) \wedge R(x)] \Leftrightarrow_C \forall x[A(x) \rightarrow R(x)]$, for any choice of R, i.e., iff
$C \Rightarrow \forall x[A(x) \rightarrow p(x)]$.

Proof (of the last *iff* statement):

1. Assume $C \Rightarrow \forall x[A(x) \rightarrow p(x)]$, then
   2. Assume $\forall x[A(x) \rightarrow R(x)]$. It automatically follows that
   $\forall x[A(x) \rightarrow p(x) \wedge R(x)]$

1. Assume $\forall x[A(x) \rightarrow R(x)] \Leftrightarrow_C \forall x[A(x) \rightarrow p(x) \wedge R(x)]$
2. Choose for R the tautological preidicate (λx. x=x).
   We now get in C
   3. $\forall x[A(x) \rightarrow x=x]$ (tautology)
   4. $\forall x[A(x) \rightarrow p(x) \wedge x=x]$ (by 1)
   5. $\forall x[A(x) \rightarrow p(x)]$

Existential Quantifiers

(17) $\exists x[A(x) \wedge B_p(x)]$.

$\exists x[A(x) \wedge B_p(x)]$ is assertable in C iff $\exists x[A(x) \wedge \mathit{p(x)} \wedge B_p(x)]$ is unassertable in C.
$\exists x[A(x) \wedge \mathit{p(x)} \wedge B_p(x)]$ is unassertable in C (given (5)), iff
$\exists x[A(x) \wedge p(x) \wedge R(x)] \Leftrightarrow_C \exists x[A(x) \wedge R(x)]$, for any choice of R, i.e., iff
$C \Rightarrow \forall x[A(x) \rightarrow p(x)]$.

Proof (of the last *iff* statement):

1. Assume $C \Rightarrow \forall x[A(x) \rightarrow p(x)]$, then
   2. Assume $\exists x[A(x) \wedge R(x)]$, call this x, a. By 1, p(a), hence

$\exists x[A(x) \wedge p(x) \wedge R(x)]$

1. Assume $\exists x[A(x) \wedge p(x) \wedge R(x)] \Leftrightarrow_C \exists x[A(x) \wedge R(x)]$
2. Let $a \in A$, and choose for R the predicate $\boldsymbol{\lambda x.\ x=a}$ (if A is empty, we're done)
3. Since $\exists x[A(x) \wedge x=a]$, we conclude by 1, $\exists x[A(x) \wedge p(x) \wedge x=a]$.
4. This x can only be a, hence p(a).
5. This hold for any $a \in A$, hence $\forall x[A(x) \rightarrow p(x)]$

Note: As pointed out by Heim (1983), and later by Beaver, this prediction seems too strong.

A few of these 10 women are pregnant. (?) Furthermore, at least one of these 10 women is pregnant and happy to be pregnant.

Each of these 10 women is pregnant. (?) Furthermore, at least one of these 10 women is pregnant and happy to be pregnant.

(18) Constraint on Conjunction (speculation, will be too weak for what follows)
A sentence, X, that dominates $p \wedge q$ is not assertable in C if one of the following holds:

a. $[X[p \wedge q/\ p \wedge r] \Leftrightarrow_C X[p \wedge q/\ r]]$ where r is a tautology
(the first conjunct is idle given a tautological second conjunct)

b. $[X[p \wedge q] \Leftrightarrow_C X[p \wedge q/\ p]]$ (the second conjunct is idle given the first conjunct)

11.2 Q (NP $[\lambda x.[RC(x)]_{p(x)}]$) (VP)

Universal Quantifiers

(19) Among these ten boys
a. Every one who likes his car bought this policy.
b. At least one person who likes his car bought this policy.

(20) $\forall x[NP(x) \wedge RC_p(x) \rightarrow B(x)]$

$\forall x[NP(x) \wedge RC_p(x) \rightarrow B(x)]$ is assertable in C iff $\forall x[NP(x) \wedge p(x) \wedge RC_p(x) \rightarrow B(x)]$ is unassertable in C.
$\forall x[NP(x) \wedge p(x) \wedge RC_p(x) \rightarrow B(x)]$ is unassertable in C (given (5)), iff
$\forall x[NP(x) \wedge p(x) \wedge R(x) \rightarrow B(x)] \Leftrightarrow_C \forall x[NP(x) \wedge R(x) \rightarrow B(x)]$ for any choice of R, i.e., iff
$C \Rightarrow \forall x(NP(x) \rightarrow [p(x) \vee B(x)])$

Proof (of the last *iff* statement):

1. Assume $C \Rightarrow \forall x(NP(x) \rightarrow [p(x) \vee B(x)])$, then
   2. Assume $\forall x[NP(x) \wedge p(x) \wedge R(x) \rightarrow B(x)]$

3. Let $x \in NP \cap R$. Given 1, $x \in p$ or $x \in B$. If $x \in p$ (by 2) $x \in B$, hence in either case $x \in B$. Hence $\forall x[NP(x) \wedge R(x) \rightarrow B(x)]$

1. Assume $\forall x[NP(x) \wedge p(x) \wedge R(x) \rightarrow B(x)] \Leftrightarrow_C \forall x[NP(x) \wedge R(x) \rightarrow B(x)]$
2. Let R be the complement of p, we derive:
   $\forall x[NP(x) \wedge p(x) \wedge \neg p(x) \rightarrow B(x)] \Leftrightarrow_C \forall x[NP(x)\,) \wedge \neg p(x) \rightarrow B(x)]$
3. Since the left hand side is a tautology, $C \Rightarrow \forall x[NP(x) \wedge \neg p(x) \rightarrow B(x)]$
   $\Rightarrow \forall x(NP(x) \rightarrow [p(x) \vee B(x)])$

This is very different from what is commonly assumed, but is it necessarily a bad result? Not obvious to me:
(19)a suggests that every boy has a car, but that might be an artifact of the particular example (of our particular choice for the predicate B): buying the (relevant) policy suggests owning a car. Things don't seem very different in (21).

(21) Among these ten boys everyone who didn't buy this policy doesn't like his car.

Consider the following:

(22) Among these ten boys
  a. Everyone who is sick knows that he is sick.
  b. Everyone who doesn't know he is sick isn't sick.

(23) Among these ten boys, everyone who doesn't have a car is a friend of mine.
Also everyone who hates his car is a friend of mine.

Existential Quantifiers

(24) $\exists x[NP(x) \wedge RC_p(x) \wedge B(x)]$

$\exists x[NP(x) \wedge RC_p(x) \wedge B(x)]$ is assertable in C iff $\exists x[NP(x) \wedge p(x) \wedge RC_p(x) \wedge B(x)]$ is unassertable in C.
$\exists x[NP(x) \wedge p(x) \wedge RC_p(x) \wedge B(x)]$ is unassertable in C (given (5)), iff
$\exists x[NP(x) \wedge p(x) \wedge RC_p(x) \wedge B(x)] \Leftrightarrow_C \exists x[NP(x) \wedge p(x) \wedge RC_p(x) \wedge B(x)]$, for any choice of R, i.e., iff
$\exists x[NP(x) \wedge B(x) \wedge p(x) \wedge RC_p(x)] \Leftrightarrow_C \exists x[NP(x) \wedge B(x) \wedge RC_p(x)]$,
i.e., iff
$C \Rightarrow \forall x(NP(x) \wedge B(x) \rightarrow p(x))$

This is again very non-traditional, but is it obviously bad?

(25) a. Among these ten boys, at least one person who likes his car is a friend of mine.
b. Among these ten boys, at least one person who is a friend of mine likes his car.