#### On why ignorance might be part of literal meaning – commentary on Marie Christine Meyer

#### 1. Background – some evidence for a grammatical theory of SIs

 Embedded/Intrusive Implicatures (Chierchia 2004, Chierchia, Fox and Spector 2012, Crnič 2013, 2014 and much more) Evidence that implicatures of a sentence φ are sometimes relevant for the

computation of the meaning of constituents that dominate  $\varphi$ 

- Computational Order (Bar-Lev and Margulis 2014, Fox 2007, Fowler 2014, Meyer 2016, Singh et. al., in press...) Evidence that Ignorance Inferences are not computed "before" the introduction of SIs (contrary to what is expected by neo-Gricean theory)
- 3. **Deactivating the Quantity Requirement** (Fox 2014) Evidence that Ignorance Inferences are deactivated while SIs are not.
- 4. **Encapsulation** (Fox and Hackl 2007, Magri 2009, 2011, 2016) Evidence that the notion of informativity that enters into the computation SIs is the formal notion of logical strength, rather than the pragmatic notion of contextual strength

## 5. Grammatical Considerations

Reasons to belive that *exh* give us good results when combined with other aspects of the theory of grammar (polarity licensing, Chierchia 2004, 2006, 2014, Crnič 2013; analogies between *only* and *exh*, Fox and Katzir 2011, Katzir 2013, 2014; considerations from other areas of grammar where Exhaustification seems to be relevant, Fox and Hackl 2006, Ivelieva 2013,...)

#### 2. Background – Conceptual underpinning for a grammatical theory of SIs

#### 2.1. Grice's Predicament

#### (1) Grice's Research Program:

To develop a body of knowledge pertaining to communicative interactions ("the conditions governing conversation", or Pragmatics, P) and to see how this could inform grammatical/logical analysis (G).

(2) Grice's Hunch:<sup>1</sup> Logicians (of his time) got things right about G.

"I wish...to maintain that the common assumption...that the divergences [between...some of what I shall call the formal devices  $\neg$ ,  $\land$ ,  $\lor$ ,  $\rightarrow$ ,  $(\forall x)$ ,  $(\exists x)$ ,  $(\iota)$  ...and...what are taken to be their analogs or counterparts in natural language] do exist is a common mistake and that the mistake arises from inadequate attention to the conditions governing conversation."

What are the "conditions governing conversation" and how can we study them? In particular, is there anything we know to be true in this domain?

<sup>&</sup>lt;sup>1</sup> This is often taken to be the conclusion of Grice's inquiry but, for reasons that will be clear shortly, I don't think it is warranted.

- (3) Virtual Truism (VT):<sup>2</sup> As speakers we are required (ethically obligated) to say
  (a) only things we believe to be true (nothing but the truth, *Quality*)
  - (b) everything we believe to be true, if it is relevant (the whole truth, *Quantity*)
- (4) **Grice's Predicament**: If his hunch about the lack of divergences is correct, VT needs to be denied.
- (5) Scalar Implicatures Aren't Pragmatic if VT is correct: Suppose s utters  $\phi$  and  $\exists \psi [\operatorname{Rel}(\psi) \text{ and } \neg \operatorname{Settle}_{c}(\phi, \psi)]^{3}$ ,
  - (a) if  $B_s(\psi)$ , s would have communicated  $\psi$ . (b) if  $B_s(\neg\psi)$ , s would have communicated  $\neg\psi$ . (by VT) (by VT and truisms about Relevance)<sup>4</sup>
  - (c) Consequently, we derive that (a) and (b) are false, i.e. that s is ignorant about  $\psi$ .

## Conceptual Underpinnings for a grammatical theory of SIs: Consistent with VT.

#### 2. 2. The Neo-Gricean Alternative to VT (NG theory of SIs)

VT is False. Instead:

- (6) NG Maxims (NGM, alternative to VT): speakers are required to say
  - (a) only things they believe to be true (nothing but the truth, *Quality*)
  - (b) everything they believe to be true, if it is relevant and can be uttered with a formal alternative of what they actually decide to say (perhaps, the whole truth if it's not too complex, c.f. Katzir 2007, *NGMQ*)

## 2.3. The Grammatical Alternative to L

If VT is right, we derive ignorance inferences and nothing beyond ignorance inferences.

Any communicative system governed by VT would have to make use of a "formal device" that would allow speakers to convey all of the relevant information they possess.

**Design Specification for a "Super-Engineer" (Fox 2007):** design a device that would allow speakers to (efficiently) engage in conversation governed by VT.

More specifically,

(7) **Design Specification for a "Super-Engineer":** design a device that would allow speakers to (efficiently) convey all of their beliefs about any Topic of Conversation.

 $<sup>^{2}</sup>$  They explain why the oath we take in a court of law seems unnecessary – a mere reminder of what we know a priori to be true.

<sup>&</sup>lt;sup>3</sup> By *Settle*<sub>c</sub>( $\phi$ ,  $\varphi$ ) I mean that either ( $\phi \Rightarrow_C \varphi$ ) or ( $\phi \Rightarrow_C \neg \varphi$ ).

<sup>&</sup>lt;sup>4</sup> Relevance by Partition, see (22) below.

## **Proposed Device:**

- (8) **Covert** *exh*: Natural language contains a covert focus sensitive operator, similar to *only* in its syntax and its semantic-interpretation.
- (9)a.  $\llbracket only \rrbracket^w = \lambda C_{st,t} \cdot \lambda p_{st} : p(w) = 1. \forall q \in IE(C,p)[q(w)=0]$ b.  $\llbracket exh \rrbracket^w = \lambda C_{st,t} \cdot \lambda p_{st} \cdot p(w) = 1 & \forall q \in IE(C,p)[q(w)=0]$

(10)Let p be a proposition and A a set of propositions:

The set of propositions in A that is *innocently excludable* given  $\phi$ , IE(A,  $\phi$ ), is the intersection of all maximal sub-sets of A, A', such that  $\{\phi\} \cup \{\neg \phi: \phi \in A'\}$  is a set of consistent propositions.

Focus values are syntactic objects (Fox and Katzir, 2011)

- (11) Focus( $\Gamma$ ) = { $\Gamma$ ':  $\Gamma$ ' can be derived from  $\Gamma$  by Katzir-simplifications of F marked constituents in  $\Gamma$ }
- (12)  $\llbracket \mathbb{C} \sim \Gamma \rrbracket^g = \text{ is defined only if}$  $\llbracket \mathbb{C} \rrbracket^g \subseteq \{\llbracket \Gamma' \rrbracket^g: \ \Gamma' \in \text{Focus}(\Gamma)\}$

#### We derive as a consequence what Meyer has called "Fox's Dichotomy":

- a. Scalar Implicatures are part of literal meaning.
- b. Ignorance Inferences are an automatic consequence of the conditions governing conversation.

# **3.** Background – Hurford's Constraint as an argument for Embedded Implicatures (CF&S)

## 3.1. Hurford's Constraint

- (13) a. #John was born in France or Paris.b. #John is away in college or in Amherst College.
- (14) Hurford's Constraint (HC):  $\#S \text{ or } S^+$ (*p or q* is odd if *q* entails *p*).

# **3.2. Apparent Counter-examples**

(15) a. John did some or all of the homework.b. John either solved 3 problems or more than 3 problems.

## **3.3. Embedded Exhaustification Removes the Counter-examples**

- In (15) the first disjunct is parsed with *exh*, and therefore HC is not violated  $(Exh(S) \text{ or } S^+ \text{ does not violate HC, if } Exh(S) \Rightarrow \neg S^+).$
- (15a)' Exh[John did some of the homework] or [John did all of the homework] *i.e., [some and not all] or [all].*

In sentences like (15), a parse with *exh* that satisfies HC is semantically equivalent to a simple parse that violates HC. But this is not true for all Hurford Disjunctions (HDs).

**Prediction:** When the two potential parses of an HD are semantically distinct, the parse with *exh* (which satisfies HC) will be verified. (*e.g. John either solved 3 problems or more than 20 problems*.)

We will provide another illustration of the general prediction with a construction type that will lead to one of Meyer's arguments for covert K.

## **3.3. Embedding Under Universal Quantifiers**

When an HD is embedded under a universal quantifier  $\Box$ , the HC obeying parse  $\Box[exhS \text{ or } S^+]$  (and only that parse) is predicted to have the SI,  $\neg \Box[exhS]$ .

John is required to do some or all of the homework.
□[exh(some) or all]
That's not true, he's required to do ALL of the homework.
□[all]
That's not true, he's not allowed to do all of the homework.
(□[exh(some) or all] & ¬◊(all))⇒
□[exhS])

Moreover, we predict a contrast with what should otherwise be an equivalence utterance of  $\Box[S]$ 

(17) John is required to do some of the homework That's not true, he's required to do ALL of the homework.#That's not true, he's not allowed to do all of the homework

## 4. Meyer's Argument for a silent Universal Modal – Matrix K

## 4.1. Evidence for Embedding without Overt Embedding

The contrast we've observed between S and S or  $S^+$  [(16) vs. (17)] is attested even when no universal quantifier appears in the surface:

(18) Context: student talking to an instructor about a class he took a year ago:

Student: I deserve a better grade. After all, I did some or all of the homework. Instructor: That's bullshit; you know very well that you did not do all of the homework.

(19) Student talking to an instructor about a class he took a year ago:

Student: I deserve a better grade. After all, I did some of the homework. Instructor: #That's bullshit; you know very well that you did not do all of the homework.

The contrast between (18) and (19) receives an identical interpretation to the contrast between (16) and (17) if every sentence can be parsed with a silent (performative) operator (Matrix K).

## 4.2. Matrix K explains HC

With Matrix K, HC follows from a general statement of the maxim of manner (non-local, as apposed to Katzir and Singh).

## 5. But Conceptual Underpinnings?

# With matrix K, ignorance inferences are derived within grammar. But didn't we say that ignorance inferences come for free within pragmatics?

More specifically, haven't we shown that they follow from virtual truisms? Can we modify our conceptual underpinnings so as to eliminate this redundancy?

# 6. Silence is Uncooperative<sup>5</sup>

(20) Lawyer: Where was John at the time of the murder? W(itness): Looks the Lawyer in the eye but remains silent (or just says "no comment").

**Empirical Fact**: Silence is uncooperative.

**Clear Intuition**: If W believes something that bears on John's whereabouts at the time of the murder, W is required to say so. If not, W is required reveal this lack of opinion.

If we add a new claim about relevance (beliefs are relevant, (21)), we can account for our observation about silence (assuming that whether or not W believes a given proposition is something that W always has beliefs about).

<sup>&</sup>lt;sup>5</sup> Thought experiment based on a question Daniel Margulis asked in the MIT pragmatics class (Fall 2016).

- (21) **Beliefs are Relevant** (Relevance is closed under  $B_s$ ): Let s be a participant in a conversation and T be a topic of conversation. If  $\phi$  is Relevant for T, so is  $B_s(\phi)$  [as well as  $\neg B_s(\phi)$ , by (22)].
- (22) Earlier Assumptions about Relevance (relevance by partition): Relevance is closed under conjunction and negation: If  $\phi$  and  $\psi$  are Relevant given T, so is  $\neg \phi$  and  $\phi \land \psi$ .

## 7. Ignorance Inferences Can't be Pragmatic

If Beliefs are relevant, (21), and VT is correct, we can no longer derive ignorance inferences pragmatically (for the same reason that we couldn't derive SIs pragmatically).

# (23) **Ignorance Inferences aren't Pragmatic if VT is correct:** Suppose s utters $\phi$ and $\exists \psi [\operatorname{Rel}(\psi) \text{ and } \neg \operatorname{Settle}_{c}(\phi, \psi)],$

- (a) s must be ignorant about  $\psi$  (see (5) above)
- (b) But then s must convey s's is Ignorance about  $\boldsymbol{\psi}$

(since that information would be relevant and available to s)

So  $\phi$  must entail ignorance about  $\psi$ .

In other words, Ignorance Inferences are derived by grammar, as Meyer claims.

More specifically, our design specification in (7) can be restated, given (21):

(24)**Design Specification for a "Super-Engineer":** design a formal device that would allow speakers to (efficiently) convey all of their beliefs *and lack thereof* about a Topic of Conversation.

**Conclusion:** There must be formal device(s) which are be able to convey ignorance in addition to SIs.

**Meyer (2013)**: Every Sentence can be embedded by a covert speech act operator, K, which together with *exh* is able to convey ignorance.<sup>6</sup>

#### Conclusion

The conceptual justification we've offered for the grammatical theory derives:

- a. "Fox's Dichotomy", if speakers beliefs are not relevant for the topic of conversation.
- b. Something like Meyer's Grammatical Theory of Ignorance Inferences, if speaker's beliefs are relevant (and they seem to be when we focus on silence)

<sup>&</sup>lt;sup>6</sup> Meyer (2013) claims that *K* is obligatory. I would claim that the demand for *K* follows from VT and need not hold in contexts where quantity considerations are deactivated (e.g. game shows, Fox 2014).