

INTRODUCTION TO PRAGMATICS  
**Lecture 2: Discourse Context, QUD and FOCUS**

Be more careful with forcing bits and pieces you find in the pragmatic wastebasket into your favorite syntactico-semantic theory. It would perhaps be preferable to first bring some order into the contents of this wastebasket as is, to clarify somewhat better the explicandum—to use Carnap's undeservedly neglected slogan—before embarking on the explication. (Bar-Hillel 1971)

Far from being a receptacle for discardables, the pragmatic waste-basket is more like a can of worms: the problems that the basket contains tend to spill over into all the domains of linguistic thinking. Instead of making linguistics neat and clean, in the best logical or mathematical style, the waste-basket imposes its unruly order on our explanations. . . . (Mey 2001:21)

Following Bar-Hillel (1971), we take an utterance to be an ordered pair  $\langle s, c \rangle$  of a linguistic constituent  $s$  and a context of utterance  $c$ .

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Let's assume, as is usually done, that a context of utterance itself always specifies a speaker.

Recall our discussion last time, and in particular the characterization of *meaning<sub>m</sub>* due to Grice (1957). A meaning in his sense is a complex intention. Linguistic expressions don't have intentions, only agents do. So:

It isn't constituents that mean something, but speakers who do so in uttering those constituents. Thus, **only an utterance carries a meaning**. Constituents only contribute their conventional content.

Then:

Given an utterance  $\langle x, c \rangle$ , with constituent  $x$  (under a syntactic analysis) and context  $c$ ,  $c$  specifying a speaker  $s$ :

The job of semantic theory is to derive the conventional content of  $x$ ,  $\sigma(x)$ .

The job of pragmatic theory is to derive  $s$ 's meaning in making  $\langle x, c \rangle$ , given  $\sigma(x)$  and  $c$ .

There is quite generally a potential gap between the conventional content of a constituent (including a matrix clause) and what it means in a given context. We see the truth of this (by just about anyone's lights) in a wide range of pragmatic phenomena, a few of which we looked at last time. Then in seeking to explain attested interpretations, it becomes imperative that we seek to

understand what a context is, and how it interacts with conventional content to determine meaning.

## I. Context of utterance: The scoreboard in a language game

A successful speech act requires that the addressee grasp the speaker's intended meaning<sub>nn</sub>.

Any act by a conscious rational agent is intentional, aiming at the achievement of certain goals.

Both by the Gricean nature of meaning<sub>nn</sub> and because the meaning of an utterance so often goes beyond the conventional content of the expression uttered, grasping the meaning of a speech act requires recognition of the speaker's immediate goals and intentions in performing the act.

Claim: In an orderly cooperative activity, which discourse is (even when the exchange is adversarial), intention recognition is both facilitated and constrained by the overall intentional structure of the interchange. This is because rational agents act in such a way as to realize their goals. So if you can infer what goals and intentions the performance of a given speech act might further, you are more likely to grasp the intentions underlying its meaning.

The proposed view of speech acts has its place in a general theory of the nature of human linguistic interaction, i.e. of discourse, proposed independently in Carlson (1983), van Kuppevelt (1995, 1996), Ginzburg (1994, 1996, 2012) and Roberts (1996/2012); in these theories, a question or topic under discussion both drives and constrains interpretation of individual utterances.<sup>1</sup> In Roberts' version, adopted here, discourse is a game in which the interlocutors conduct a collaborative inquiry about the way things are, on the basis of their common fund of information about that world, the Common Ground (CG). Following Stalnaker (1979), we don't know which world we're in, but the CG is the set of propositions which we all purportedly take to truthfully characterize it (though some may be false, whether we know it or not). A proposition is represented by the set of worlds in which it's true. Hence, the intersection of the CG at a given point in discourse is the Context Set (CS), the set of candidate worlds for reality according to these interlocutors at that time.

Here are the basic assumptions of this view of discourse and the context of utterance:

1. Language is a **game of collaborative inquiry structured by the recognized intentions of the interlocutors**.  
A **discourse** is one round of this game.
2. Intentions involve commitments to goals. In the language game, players attend to two principal kinds of goals:
  - **Domain goals** and the associated **plans** to achieve them are the things the interlocutors are publicly committed to achieving in the world and the strategies they adopt to do so.

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<sup>1</sup> Over the past 20 years, a significant body of literature in formal pragmatics and psycholinguistics has grown up around the QUD framework, arguing that it can play an important role in the development of an empirically adequate account of a variety of a wide range of pragmatic phenomena. For more topics and references, see: <http://www.ling.ohio-state.edu/~croberts/QUDbib/>.

These are relevant in the language game insofar as they may indirectly motivate and constrain the interlocutors' linguistic interaction.

- **Discourse goals** are a distinguished type of domain goal, those the interlocutors are jointly committed to achieving in the discourse itself. These are represented by questions, often implicitly posed, which guide the interlocutors' inquiry. You can think of these as issues or topics under discussion. These, too, are organized to reflect an underlying plan for achieving these goals, into **strategies of inquiry**.
3. The main goal in any round of the game is to share information about the way things are, adding to the interlocutors' **Common Ground**.
  4. There are three kinds of moves in a language game:
    - a) **Interrogations** pose questions; they are **set-up moves** in the language game: If accepted by the interlocutors, a question establishes a discourse goal to which the interlocutors are cooperatively committed: resolving the accepted Question Under Discussion (QUD).
    - b) **Assertions** offer partial answers to the QUD at the time of utterance; if accepted, they are **payoff moves**, in which the interlocutors come closer to achieving their immediate discourse goal of addressing the QUD.
    - c) **Directions** propose domain goals to the addressee, and hence are set-up moves as well. If accepted, they are added to the addressee's individual domain goals, with a consequent modification of her associated plans.
  5. If discourse is to be maximally effective, it must be orderly. What serves to organize any game is the players' immediate goals and intentions in playing the game. Typically, interlocutors in a discourse are already committed to certain domain goals. If a group of collaborating agents are rational, then in keeping with the general constraints on rational agency (Bratman 1987):
    - the goals they adopt and the plans they form to achieve them, are consistent, and in particular,
    - discourse goals (QUD) should subserve pre-existing or over-arching domain goals.Hence, addition of information to the CG is not random and unconstrained, but is guided by the mutually agreed upon topics for discussion, these in turn constrained by recognized domain goals. Interlocutors choose a topic for discussion and stick with it, even complaining if others inappropriately change the subject: *What's that got to do with the price of eggs?* As we might expect in a theory of linguistic pragmatics—of how context comes to bear on interpretation—the orderliness which characterizes felicitous discourse is surely in the interest (a) of more efficient information retrieval and storage, and (b) of the practical reasoning involved in intention recognition, and hence in meaning recognition:

#### **The intentional structure of discourse:**

The structure of a discourse interaction is designed to help retrieve the speaker's intended meaning for a given utterance, in view of the goals of the interaction. This is what makes it reasonable to intend that one's audience will recognize that one intends them to grasp a particular meaning, even when it is underdetermined by the conventional content of what one says.

A rational agent's intentions are ideally intrinsically bound up with her plans for action (Bratman 1987). Hence we have:s

**Rational Cooperation in a Discourse  $D$ :** Make your utterance one which promotes your current intentions in  $D$ . (cf. Grice's Cooperative Principle 1967, and its counterpart in Thomason 1990)

6. This orderliness is reflected in the crucial role of the QUD in interpretation. Thus, we can derive Grice's (1967) maxim of Relation from the nature of the game and standard assumptions about rational agency:

**RELEVANCE:** Since the QUD reflects the interlocutors' goals at any point in a discourse, in order for an utterance to be rationally cooperative it must address the QUD.

An utterance  $m$  **addresses a question**  $q$  iff  $m$  either contextually entails a partial answer to  $q$  ( $m$  is an assertion) or is part of a strategy to answer  $q$  ( $m$  is a question) or suggests an action to the addressee which, if carried out, might help to resolve  $q$  ( $m$  is a suggestion).

Recent work in erotetic logic (the logic of interrogation) by Ciardelli (2015) in the Inquisitive Semantics framework suggests ways of refining what it is to be RELEVANT. Roberts (2015) argues from the semantics and pragmatics of epistemic modals in natural language that we need to loosen what it is to address a question, to admit the RELEVANCE of, e.g., answers which are merely *likely* to entail a partial answer to the QUD. So the strict, elegant formulation here surely needs modification.

7. Just as we develop plans to achieve our domain goals, to address complex questions, interlocutors usually develop **strategies of inquiry**, involving a series of related questions. These are sequences of moves designed to (at least partially) satisfy the aims established in a particular round of the game while obeying the game's general constraints. To be a strategy of inquiry, such a sequence must display a hierarchical structure based on a set of questions partially ordered by entailment. The constitutive moves and the overall strategy are constrained by Relevance and what it is to be a rational cooperative agent. Rhetorical relations between utterances (Mann & Thompson 1986,1988, Asher & Lascarides 1994,1998a,b) pertain to features of such strategies (Roberts 2004).
8. The context of utterance in a language game can profitably be characterized as a **scoreboard** (Lewis 1979) tracking the distinguished bodies of information relevant for interpretation as these evolve under the rules of the game. A non-defective context is one in which the interlocutors share the same content in their individual representations of what's on the scoreboard. Here is a somewhat simplified version of the scoreboard for a language game (see Roberts 1996, 2012b for more details).

The **scoreboard for a language game** is a tuple,  $\langle I, G, M, <, CG, QUD \rangle$ , where:

$I$ , the set of interlocutors at  $t$

$G$ , a set of sets of goals and priorities in effect at  $t$ , such that

for all  $i \in I$ , there is a (possibly empty)  $G_i$  which is the set of  $i$ 's prioritized desiderata, including those goals which  $i$  is publicly committed at  $t$  to trying to achieve

$G = \{ G_i \mid i \in I \}$ .

$G_{com} = \{ g \mid \forall i \in I: g \in G_i \}$ , the set of the interlocutors' common desiderata at  $t$ .

$G_Q = \{ g \in G_{com} \mid \text{there is some } Q \in QUD \text{ and } g \text{ is the goal of answering } Q \}$

$M$ , the set of moves made by interlocutors up to  $t$ , with distinguished sub-sets:

$A \subseteq M$ , the set of assertions

$Q \subseteq M$ , the set of questions

$S \subseteq M$ , the set of suggestions

$Acc \subseteq M$ , the set of accepted moves

$<$  is a total order on  $M$ , the order of utterance

$CG$ , the common ground, the set of propositions treated as if true by all  $i \in I$  at  $t$

$QUD \subseteq Q \cap Acc$ , the ordered set of questions under discussion at  $t$ , s.t. such that for all  $m \in M$  at  $t$ :

a. for all  $q \in Q \cap Acc$ ,  $q \in QUD(m)$  iff  $CG$  fails to entail an answer to  $q$  and  $q$  has not been determined to be practically unanswerable.

b.  $QUD$  is (totally) ordered by  $<$ .

c. for all  $q, q' \in QUD$ , if  $q < q'$ , then the complete answer to  $q'$  contextually entails a partial answer to  $q$ .

and in addition:

d. for all  $Q \in QUD$  there is a  $g \in G_{com}$  such that  $g$  is the goal of answering  $Q$ , and

e. for all  $Q \in QUD$ , it is not the case that  $CG$  entails an answer to  $Q$

For all  $i \in I$ , if  $i$  is a sincere, competent and cooperative interlocutor in  $D$ , we can use  $G_Q$  to characterize two kinds of publicly evident desiderata and goals held by  $i$  (at time  $t$ ):

**Discourse Goals** of  $i = G_Q$

**Domain Goals** of  $i = G_i \setminus G_Q$

$G_{com} \setminus G_Q$ : the set of common Domain Goals of all the interlocutors

Since the  $CG$  includes all that the interlocutors take to be true, it includes information about the discourse scoreboard as well. The point of the more articulated scoreboard is not so much to *replace* the  $CG$  as to clarify the different types of information that interlocutors crucially track in discourse, and the different roles these types of information play in the evolution of felicitous discourse.

Clause (d) of the definition of the  $QUD$ : “for all  $Q \in QUD$  there is a  $g \in G_{com}$  such that  $g$  is the goal of answering  $Q$ ”, ensures that each of the questions under discussion, as agreed upon by the interlocutors, corresponds to a shared goal, that of answering that question. Since all of the questions in  $QUD$  are reflected in  $G_Q$ , any rational, cooperative interlocutor should address the  $QUD$  (unless more important goals interfere). Then we formally define **RELEVANCE**:

Given  $QUD$   $q$ , a move  $m$  is **RELEVANT** iff  $m$  addresses  $q$ .

Given a particular QUD, the role of a given utterance in the intended plan of the speaker to address the QUD can be inferred, and in this way, the intended interpretation inferred, especially if we understand that the QUD subserves the larger domain goals of the interlocutors.

The three principal kinds of moves in a discourse game, for which the above is the scoreboard, can now be characterized formally as follows, where the diacritics  $\cdot$ ,  $?$ , and  $!$  stand for declarative, interrogative, and imperative mood, respectively:

**Assertion:** (following Stalnaker 1979)

If an assertion of  $\cdot\alpha$  is accepted by the interlocutors in a discourse  $D$ ,  $|\cdot\alpha|^D$  is added to CG.

**Interrogation:** (Roberts 1996)

If a question posed by  $?\alpha$  is accepted by the interlocutors in a discourse  $D$ , then  $|\alpha|^D$ , a set of propositions, is added to the QUD.

A question is removed from QUD iff either its answer is entailed by CG or it is determined to be unanswerable.

**Direction:** (cf. related proposals in Roberts 2004, Portner 2007, to appear)

If a proposed direction  $!_iP$  is accepted by the addressee  $i$  in a discourse  $D$ , then revise  $G_i$  and  $i$ 's associated evident plans to include the realization, under the applicable circumstances, of  $!_iP$ .

$G_i$  is revised to remove the realization of  $!_iP$  once it *or the larger goals it subserves* is no longer potentially applicable (e.g., it has been realized, or else it is determined that it cannot be practically realized).

The conceptual foundations of this approach to pragmatics are Gricean. And the implications for pragmatic theory are wide-ranging.

One reason for this is that the way the three kinds of moves are modeled in the QUD framework is designed to dovetail with the independently motivated compositional content, realized in a formal semantics, of utterances with declarative, interrogative, and imperative mood, as I'll illustrate with the imperative in the next section. Thus, there is a natural formal **congruence between conventional content and default pragmatic function**. In the matter of speech acts, the semantic types of the three types of clause are the right sorts of objects to play the roles of the constitutive moves in the language game as characterized here. Thus, the formal pragmatic framework not only coordinates smoothly with compositional semantics, especially of the dynamic variety, but is compatible with the formal logics commonly used to model inference in discourse, including erotetic logics like the inquisitive semantics of Groenendijk and his associates (see the website <https://www.ilic.uva.nl/inquisitivesemantics/> for a wide range of related work in this on-going project).

There are some additional consequences of this view of pragmatics for speech act theory. Making a given type of speech act entails that the speaker incurs certain commitments. For example,

- **All moves carry a commitment to RELEVANCE.** This goes well beyond information sharing *simpliciter*, and so marks a difference from Stalnaker's (1979) account of assertion. But unlike Sperber & Wilson's (1985) notion of Relevance, this one is inherently relational, a function of goals and intentions, and hence arguably closer to Grice's original notion.
- **Assertions have a doxastic flavor:** making an assertion involves a commitment to believing (purporting to believe) that the proposition asserted is true and based on adequate evidence.
- **Directions pertain to priorities,** as reflected in the interlocutors' goals: These are often **deontic** (pertaining to permission and obligation), or under certain circumstances **buletic** (pertaining to wishes). If proposed to an addressee, they propose the (conditional) adoption of desiderata and/or goals, with a consequent adjustment of the addressee's plans. If accepted by an addressee, then she is (conditionally) committed to those goals—she *ought* or she *should* or she *must* do what's necessary to accomplish them, under the appropriate conditions, and under standard semantic accounts of the meanings of those modals.

These commitments, which follow from the nature of the game, amount to what Searle called **sincerity conditions on the performance of these acts, arising from the function of their canonical roles in the language game.** For speakers, assertions are associated with a commitment to truth, questions with a sincere commitment to inquiry, suggestions with a sincere belief that the realization of the proposed act by an addressee would further certain aims. Of course, this doesn't entail that speakers actually *have* the relevant intentions. But making a speech act does incur commitments: it puts the speaker and/or addressee under obligation, and as we shall see:

- (a) This has consequences for our understanding of the way that imperatives interact with deontic modality, and hence for what the class that Searle called *Directives* has in common with my class of Directions.
- (b) It provides the foundation of an explanatory account of performatives—Searle's Declaratives—and of performativity.

Moreover, the three basic speech act types, and the associated commitments to sincerity, relevance and other reflexes of Gricean cooperation are together **essentially constitutive of what it is to play the language game.** These acts are basic to the nature of the game. To display competence in the game is to be able to understand and use these three types of moves under the associated constraints on cooperativity and rationality. To grasp the use of these moves and their conditions and effects is to understand the language game. Thus, to the extent that understanding the structure of discourse in this way proves useful in explaining how we interpret the things speakers say, this argues that the proposed three-way distinction reveals a great deal about the way in which we share meaning in the Gricean sense. If so, then this is an illuminating taxonomy: It helps to explain the mechanisms by which we grasp a speaker's intended non-natural meaning.

**Note:** the above sketch of a theory of discourse context is not intended to be reductionist. There are many facets of discourse which bear careful study and might fruitfully extend or elaborate the characterization given above. For example, Roberts (2004) argued that the notion of a strategy of inquiry might be of interest on its own, and in fact might be the locus for consideration of what are sometimes called Rhetorical Relations (see especially the SDRT of

Asher & Lascarides 2003, or their simple introduction 2007) or coherence relations (Kehler 2002). In the work of Kehler and his associates (Kehler 2002, Kertz et al. 2006, Kehler et al. 2008, Rohde et al. 2006,2007,2008a,b), they show that coherence relations play an important role in anaphora resolution. Kehler (2009) argued that these coherence relations in their experimental design actually reflect different types of QUD. So this is entirely consistent with the framework proposed above.

Similarly, since Lewis (1969), there has been increasing interest in game-theoretic approaches to discourse, as well as Optimality Theoretic approaches to pragmatics, especially since 2000. But the characterization of discourse as a game here is entirely compatible with such proposals, which may be viewed as ways of making precise how we use plan recognition and information about the interlocutors' joint goals and the QUD to abductively infer meaning, on the assumption that the game has rules for cooperative interlocutors.

## II. Bridge: What's appealing about this characterization of a context of utterance?

What should a linguistic theory of pragmatics do? and how does this picture begin to accomplish what is needed?

### Desiderata for an adequate pragmatic theory:

- in keeping with general criteria of adequacy for linguistic theory:
  - **Empirical adequacy:** predict all and only the attested **meanings** of an expression in particular contexts of use, doing so
    - with a view to the independently motivated syntactic analysis and compositional semantics of the expression
    - without appeal to ad hoc principles or discourse structures
  - **Explanatory adequacy:** explain certain language universals (see below) that are arguably pragmatically-based, i.e. related to the way that an expression has a meaning *in context*
- specific requirements for pragmatic theory: [first pass]
  - give an account of what a context of utterance is, and how it is updated through the interaction with conventional content over discourse: a dynamic pragmatics
  - use a methodology appropriate to investigating the role of context in interpretation
  - afford a place for those aspects of meaning which cannot be readily reduced to truth conditional content

### Linguistic universals to be explained by pragmatic theory:

A. The cross-linguistic ubiquity and canonical function(s) of grammatical mood (Sadock & Zwicky, Portner & Zanuttini):

**Mood (grammatical universal):** All known languages display three basic clause types, characterized as a distinction in grammatical mood:

Declarative  
Interrogative  
Imperative

**Mood (pragmatic universal):** There is a strong correlation between choice of grammatical mood and intended type of move in a language game:

Declarative mood is typically used to make an **assertion**

Interrogative mood is typically used to pose a **question**

Imperative mood is typically used to issue a **direction**

the bridge: the standard semantic types of the moods are tailored to playing the particular functional roles to which main clauses in these moods typically play

Recall one of the central arguments that speech act type doesn't follow from grammatical mood: embedded uses of the clause types display the same grammatical mood, even embedded imperatives, but are not independent speech acts. We need a semantics that permits us to account for these uses, leaving speech acts to the pragmatics.

The account of linguistic context in Part I arguably helps to explain the Mood universal. The reason for the three canonical types of speech acts is that each plays a role in contributing one of the central components of an evolving context of utterance whose structure is based on hierarchically organized intentions: assertions contribute to the CG; questions pose discourse goals; and directives propose domain goals, additions to the interlocutors' individual and collective goals in the world. The latter two are ways of changing the world—aiming to come to know what it's like (a change in the interlocutors) and aiming to modify it in more general ways. The Common Ground has word-to-world fit, purporting to characterize the world, as relevant to the interlocutors' goals.

There are a number of other pragmatic universals grounded in conventional content across languages. The next we'll consider is the ubiquity and standard pragmatic function of FOCUS in natural language utterances. What is FOCUS and how can this framework help to explain its presence and role?

### III. Focus and an alternative pragmatics

Roberts (1998) surveyed all the languages she could find with respect to the phenomenon called FOCUS, and on the basis of her findings offered the following hypothesis:

**FOCUS grammatical universal:** Every language has formal ways of foregrounding some components of an utterance, backgrounding the rest, (almost) always involving prosody, and sometimes morphosyntactic features, as well. This phenomenon is known as FOCUS.

Roughly speaking, in the prosodic realization of FOCUS in human speech, perceptually more prominent aspects of the tune are aligned in realization with particular syntactic constituents, with the effect of drawing attention to those constituents. In English, these prominent features of the tune primarily involve pitch excursions, while in other languages they may involve other prosodic features, e.g. pitch range expansion in Japanese (Beckman 1996). A **FOCUSED constituent** is one which is aligned with such a prominent feature of the prosodic contour with

which it is realized. The term **FOCUS** is also quite commonly used to denote the pragmatic function(s) of such alignment.

To get the flavor of the relevant phenomena, consider first these examples:<sup>2</sup>

	(3)	(4)
a)	John bakes bread. H* LL%	John bakes bread. L* LH%
b)	John bakes bread. H* LL%	John bakes bread. L* LH%
c)	John bakes bread. H* LL%	John bakes bread. L* LH%

All of these examples have the same “text”, the declarative clause *John bakes bread*. Each column has the same “tune”, a simple sequence of a single pitch accent H\* or L\* followed by a boundary sequence LL% at the right margin, either LL% or LH%. The H\* LL% tune is commonly associated with a simple non-contrastive assertion, while L\* LH% is often used to pose a question. Moreover, the pitch accent can be associated with different sub-constituents of the clause: each row shows association with a different element, the direct object in (a), the verb in (b), the subject in (c). It is the alignment of the pitch accent which tells us which constituent(s) may be focused in the string.

But what does this alignment tell us about the meaning of a sentence in which it occurs?

Observation: FOCUS has well-known, regular effects on interpretation.

The prosodic focus in (3) and (4) tells us something about the kinds of contexts in which these utterances would be felicitous. For example, when uttered, the examples in column (3) would be understood to answer different questions:

- (5) Question/answer congruence:
- a) What does John bake?
  - b) How does John do with bread?
  - c) Who bakes bread?

(3b) would be infelicitous as an answer to (5a) or (5c), (3a) couldn't felicitously be used to answer (5b), etc, although the string *John bakes bread* carries the same semantic content in each of its prosodic forms, so in principle offers an answer to each of the questions in (5).

(5a) What does John bake?

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<sup>2</sup> For more about ToBI prosodic annotation, see Pierrehumbert (1980), Pierrehumbert & Beckman (1990) and the tutorial at <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-911-transcribing-prosodic-structure-of-spoken-utterances-with-tobi-january-iap-2006/>. In most semantic work that includes annotation of FOCUS a simpler means of marking it is assumed, wherein the nuclear (most prominent) accent in a phrase is put in all-caps. This is a pretty crude means of marking prosodic focus, and arguably leads to significant mis-analyses, since a clause can include multiple pitch accents and even multiple intonation phrases. Students with an interest in FOCUS are strongly urged to take the time to work with the ToBI annotation illustrated here.

(3b) #John bakes bread.  
H\* LL%

**N.B.:** Throughout, ‘#’ is used to indicate that the expression in question, under an analysis of its form that includes the prosody, is infelicitous in the context given. ‘#’ is a specifically pragmatic diacritic. It suggests that the expression is grammatical and could be used in a felicitous, meaningful way in other contexts.

Roberts (1996/2012) defines the requirement of congruence illustrated in this discourse in terms of the notion of a focus alternative set:

The focal alternatives for a given utterance are defined as follows:<sup>3</sup>

The **focus alternative set** corresponding to a constituent  $\beta$ ,  $\|\beta\|$ , is the set of all interpretations obtained by replacing all the FOCUSED constituents in  $\beta$  with variables, and then interpreting the result relative to each member of the set of all assignment functions which vary at most in the values they assign to those variables.

For (3b), this set would be the set of propositions of the form *John Vs bread*,  $V$  a two-place relation. Now recall that a question is a set of propositions, intuitively the set of all complete answers to the question. So for the question (5a), that would be the set of propositions of the form *John bakes x*, where  $x$  is some entity susceptible of baking. Call this the set of Q-alternatives determined by the question. Then I defined:

Move  $\beta$  is **congruent** to a question  $? \alpha$  iff its focal alternatives  $\|\beta\|$  are the Q-alternatives determined by  $? \alpha$ , i.e. iff  $\|\beta\| = \text{Q-alt}(\alpha)$ .

[after von Stechow (1989)]

In other words, a response to a question is congruent to that question just in case the focus alternatives of the response are the same as the Q-alternatives of the question. In the sequence (5a)-(3b), congruence fails. On the other hand, (3b) would be congruent with (5b), the question whose Q-alternatives are just the focus-alternatives of (3b).

Something similar is going on in the examples in column (4). They might be used, for example, to question what someone else had just claimed. But as with (3), there is a felicity condition on the claims that could be thereby called into question, as a function of the associated prosody. So if the preceding utterance is one of those in (6), even though the proposition expressed by the string *John bakes bread* could be taken to correct or in some other way contrast with any of the

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<sup>3</sup>Rooth (1985) and von Stechow (1989) don't define alternatives in this way. Instead, as in Krifka (1992), alternative sets are cancelled out when the constituent which determines them is argument to a focus-sensitive operator. That is not the case with the definition I offer here, and the difference should be borne in mind in comparing this account with those of Rooth, Krifka, or von Stechow. For simple cases, (24) yields the same results as the assumption that focused constituents are raised at Logical Form, and that such raising is island-insensitive (see Rooth (1995)). However, see Rochemont & Culicover (1990) for arguments that association with focus is bounded, i.e. sensitive to islands; I don't yet see how to cope with the problem this raises in defining the focus alternative set, but it doesn't seem that, e.g., Rooth or von Stechow have taken this type of data into account either.

forms in (6), there is only one felicitous prosody for (4) in each case, that which is congruent with the intended contrast set:

- (6) Contrast congruence:  
a) John bakes cupcakes.  
b) John sells bread.  
c) Mark bakes bread.

- (6c) Mark bakes bread.  
(3b) #John bakes bread.  
          H\*          LL%

We might say informally here that the requirement is that both the response in (3) and its target in (6) must both be in the focus-alternatives of the response. But we saw above that the focus-alternatives of (3b) includes a set of propositions wherein John bears some relation or other to bread. But the proposition that Mark bakes bread is not in that set, so (3b) is infelicitous as a contrast targeting (6c). But (3c) has a different focus-alternative set—the set of propositions of the form *x bakes bread*, where *x* is some agent or other. Since the denotation of (6c) is in that set, (3c) would be a felicitous contrastive follow-up targeting (6c).

There are other interpretive effects that go beyond contextual felicity. Consider the modification of the text in (3a) and (3b) with the addition of adverbial *only*:

- (7) Association with FOCUS:  
a) John only bakes bread.  
                          H\*  LL%
- b) John only bakes bread.  
                          H\*          LL%

In these examples, there is a truth conditional difference between (a) and (b): If we take the focus to be solely on *bread* in (7a), then this could be true when (7b) is false, and *vice versa*. For example, (7a) can be used to deny that John bakes cupcakes or cookies or strudel. Still, that denial is consistent with his eating bread, as well as baking it. But (7b) is consistent with John's baking cupcakes, while it could be used to deny that he eats bread—he *only bakes* bread, he doesn't *eat* it. On the assumption that there is no lexical or syntactic ambiguity in this string, the attested difference in truth conditions can only be the result of the prosodic focus.

Because semanticists take truth conditions to be the bed-rock of the conventional contribution of an expression to its possible meanings in use, such effects show that FOCUS has to be reckoned with in any adequate theory of meaning. And because of the pervasive occurrence of FOCUS in verbal utterances in a given language (e.g., English) and, more importantly, its universal occurrence across languages, with (so far as I know) FOCUS in each language imposing felicity constraints on utterances, as in (3) and (4), and truth conditional effects through association of operators like *only* with FOCUS, as in (7), we require an explanation for why what seems in the general case to be a pragmatic constraint on felicity should be present across languages.

The key to the underlying generalization has grown out of work due to Rooth (1985,1992) on the semantics and pragmatics of FOCUS and of Association with FOCUS. The 1992 version of this theory is quite simple, and essentially pragmatic: We calculate the FOCAL structure of the utterance in a compositional way on the basis of its prosody, in parallel with the compositional calculation of its truth conditional content. The FOCAL structure then triggers an anaphoric presupposition: It presupposes its focal-alternative set. Anaphora generally imposes constraints on felicitous contexts of utterance: They must satisfy the anaphoric presupposition. Thus, the FOCAL structure presupposes that the context is one in which the focal alternative set is already salient.

Here's informally how this works:

- Some constituents in an utterance are marked with the feature F (for FOCUS).
- Each constituent has a set of focal alternatives: the set of values obtained by ranging over all possible values for any F-marked sub-constituents and plugging those into the compositional semantics for the remainder of the constituent.
  - If there's no F-marked sub-constituent, the constituent's focal-alternative set will be a singleton containing only its ordinary denotation.
- In any given utterance, there's one or more **focal frames**,<sup>4</sup> constituents marked with the operator  $\sim$ . The operator  $\sim$  triggers a presupposition: there is a salient set of alternatives of which is a sub-set of the set of focal alternatives of the focal frame, and is such that the ordinary semantic value of the focal frame is a member of that set.

Illustrating:

(5c) Who bakes bread?

(3c) [<sub>S</sub> John bakes bread]  
           H\*                  LL%

In (3c) we take the focal frame to be the entire clause *S*, marked with  $\sim$ . This triggers the presupposition that the set of focus-alternatives of *S* is a sub-set of some salient set of alternatives, which set includes the denotation of *S* itself. The set of focal alternatives of (3c) is the set of propositions of the form *x bakes bread*, *x* some agent.<sup>5</sup> That's a lot of propositions, since there are a lot of agents in the world. Suppose that in posing the question (5c), the speaker meant to inquire about who among a group of friends that are coming to a potluck is a bread baker—John, Sukjae, and Lucretia. Then the question's Q-alternatives is the set of propositions {John bakes bread, Sukjae bakes bread, Lucretia bakes bread}. That Q-alternative set is salient—the question was just posed; it is a subset of the focal-alternative set of the focal frame *S*; and the ordinary denotation of *S* is an element of that set. So the presupposition triggered by  $\sim$  is satisfied in the context following (5c), and (3c) is felicitous. This would not be the case after (5a) or (5b).

Rooth's elegant theory also works quite nicely for other kinds of FOCUS effects. Here's an example where it plays a role in generating a (scalar) conversational implicature:

<sup>4</sup> Rooth doesn't use the term *focal frame*, which is due to Truckenbrodt (1995). But the latter uses it to refer to Rooth's  $\sim$ -annotated constituent.

<sup>5</sup> I've simplified here for ease of exposition, not considering the possibility that there are multiple agents who bake bread, so joins of the members of this group.

- (16) Steve, Paul, and Mats took a quiz. Later, George asks Mats how it went. The following two utterances convey very different information, though their proffered content appears to be the same:
- Well, I [<sub>VP</sub>~ [passed]<sub>F</sub> ]
  - Well, [<sub>NP</sub>~ [I]<sub>F</sub> ] passed

(16a): Focal alternative set is the set of properties *P*  
 salient properties are those reflecting achievements on the test: {Aced it, passed it}, and these form a scale,<sup>6</sup> with stronger values to the left: < Aced it, passed it >  
 implication: the speaker passed the test but didn't Ace it, or else he'd have said so, to give the maximally informative answer to the question

(16b): Focal alternative set is the set of (possibly plural) individuals *x*  
 salient individuals are those who took the test and passed: {Steve+Paul+Mats, Steve+Paul, Steve+Mats, Paul+Mats, Steve, Paul, Mats}  
 these also form a partially ordered set, with the first element entailing all the others, etc.  
 implication: no one other than the speaker passed, or else he'd have said so, to give the maximally informative answer to the question

- (18) a. Mary only [<sub>VP</sub>~ introduced [Bill]<sub>F</sub> to Sue ]  
 b. Mary only [<sub>VP</sub>~ introduced Bill to [Sue]<sub>F</sub> ]

(18a): Focal alternative set is the set of properties of the form *introduced x to Sue*

(18b): Focal alternative set is the set of properties of the form *introduced Bill to x*

Hypothesis about *only*: it associates with FOCUS, by which is meant that it ranges over (a subset of) the focal-alternative set of the constituent to which it adjoins.

Predictions: (18a) implies that Mary didn't introduce Sue to anyone other than Bill.

(18b) implies that Mary didn't introduce Bill to anyone other than Sue.

One of these can be true but the other false.

This is all very nice.

But there are a couple of problems with Rooth's theory which shows that it doesn't yet capture something important about the discourse role of FOCUS.

For Rooth, once Focus has been "interpreted", the p-set for that clause and all above it are trivial -- singleton sets of the ordinary semantic interpretation. Hence, he can't in general get the generalization in Roberts '96 about Focus presupposing the question under discussion (QUD), not so long as the example also involves a narrow contrast, or a scalar implicature, or association with focus. So he can't simultaneously predict how these things work AND account for felicity with respect to the immediately preceding context. E.g., in his:

(18)a. Mary only introduced [Bill]<sub>F</sub> to Sue.

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<sup>6</sup> This is a Horn scale, Horn (1972), which we'll discuss in the last class.

- b. Mary only introduced Bill to [Sue]<sub>F</sub>.

If Rooth wants to explain the association with focus effects, he must adjoin ~ to the VP argument of *only*. But this means that focus is filtered at that level, so that the focus semantic value of both (3a) and (3b) is { |Mary only introduced Bill to Sue| }, a singleton set. Then, he can't explain the fact that of the questions in (3'), (3a) may only felicitously answer (3'a), while (3b) may only felicitously answer (3'b):

- (18')a. Who did Mary introduce to Sue?  
b. Who did Mary introduce Bill to?

Rooth's theory can be modified to deal with this problem, e.g. in ways related to his response in Rooth (1996) to multiple focus (though see Féry & Samek-Lodovici for a different approach), but it shows that in this theory the different types of Focus effects are unrelated except insofar as they all involve alternatives. This is in contrast to the account in Roberts (1996), where the contrast, scalar, and association with focus facts follow from the presupposed relation of the utterance to the QUD.

In that work, I proposed that the focal-alternatives of an utterance must always be congruent with the Q-alternatives of the QUD. I think this is a reflection of the central importance of RELEVANCE in lending coherence to a cooperative interchange of information, and the role of goals and plans in guiding action.

A closely related approach is offered for the case of *only* and other exclusives by Beaver & Clark (2008), extended to look at exclusives across a range of languages by Toosarvandani (2010). They argue that the exclusives themselves are anaphoric to the QUD in this type of framework, giving rise to association with FOCUS. Whether these elements are lexically sensitive to the QUD is contentious; see Roberts (2011) for counter-arguments. But it is clear that the QUD does play a pervasive role in constraining FOCUS in discourse. This permits us to formulate the following generalization about the pragmatic role of FOCUS:

**FOCUS pragmatic universal:** The FOCAL structure of an utterance presupposes the relevance of a congruent alternative set. Since the QUD is among the most salient alternatives in any context of utterance, an utterance must always be congruent with the QUD.

Thus, the framework outlined above, where the QUD plays a central role in the intentional structure of the discourse context, delivers something that helps explain both question-congruence and association with FOCUS.

#### Further notes on FOCUS:

Prosodic FOCUS is one of the most complex linguistic phenomena I know of.

For example, Rooth also has problems properly accounting for the phenomenon of **de-accentuation**.

(26) What's become of your college roommates?

June married an Italian, and Sarah married a southern European, too.  
H\* LH% L\* L+H\* LL% H\* LH% L+H\* LL%  
H\* LH% L\* L+H\* LL% H\* LH% !H\* !H\* !H\* LL%

N.B.: 2<sup>nd</sup> VP can't lack accent entirely, despite the parallelism:

June married an Italian, and Sarah married a southern European.  
H\* H\* H\* LL% H\* LH% LL%

This is basically the subject matter of Schwarzschild (1999). We don't have room to discuss this here. But see also Kadmon (2000) for criticisms of Schwarzschild's notion of GIVENness, used to account for such de-accentuation, on the grounds that he fails to take into the account the role of the QUD in determining what is meant to be GIVEN. See also Féry & Samek-Lodovici (2006) for important work on embedded FOCI.

Another interesting vein of inquiry in this domain involves examples like the following from Roberts (1996/2012):

(47) (No prior discourse, at least on a related subject)  
A: [When are you going to China]<sub>F</sub>?  
B: Well, I'm going to [China]<sub>B</sub> in [April]<sub>A</sub>.

(47B) answers the question in (47A), but it does more than that. Its prosodic focal structure presupposes that the question under discussion isn't (47A), but the super-question in (48):

(48) When are you going to which place?, i.e. {you are going to  $u$  at  $t$  :  $u$  a place,  $t$  a time }

It is generally assumed that alternative sets, like operator's domains, are non-singleton, non-empty. This question, then, implicates that there is more than one place that B is planning to visit. Of course, in this context, the super-question hasn't already been accepted by A. But A is likely to accommodate it, out of curiosity, and ask (49):

(49) Oh? Where else are you going, and when?

Roberts suggests that this arises because the prosody in (47) presupposes not just the direct question addressed, but a complex strategy of inquiry. Büring (2003) develops this idea in detail, with his notion of discourse-trees realizing these complex strategies.

In talking about the effects of prosodic FOCUS in interpretation, we have appealed to the idea that the focal structure of an utterance triggers a certain kind of presupposition. Next time we will turn to consider more generally the notion of a presupposition, and its role in pragmatic theory.

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