Rise-fall-rise intonation and secondary QUDs

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Rise-fall-rise and secondary information

(1)  B: John, who is a vegetarian, envies Fred.
Rise-fall-rise and secondary information

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(4) B: As for Fred, he ate the beans.
Rise-fall-rise and secondary information

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But other uses of RFR appear more or less unrelated:

(5) A: Have you ever been West of the Mississippi?
   B: I’ve been to Missouri...
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(6) A: I’d like you here tomorrow morning at eleven.
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(7) A: So I guess you like [æ]pricots then?
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(8) A: What about Fred, what did he eat?
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Main aim: To explain this distribution, in terms of the core meaning of RFR.
Outline

1. Intonational Compliance Marking (Westera 2017)

2. Application to rise-fall-rise

3. Conclusion
1.1. Compliance marking: rising declaratives

(9)  A: *(Enters with an umbrella.)*  
B: It's raining?
1.1. Compliance marking: rising declaratives

(9) A: *(Enters with an umbrella.)*
B: It’s raining?

(10) B: What do you think of your new neighbor?
A: He’s attractive?
1.1. Compliance marking: rising declaratives

(9)  A: (Enters with an umbrella.)
    B: It’s raining?

(10) B: What do you think of your new neighbor?
     A: He’s attractive?

(11) A: (Receptionist) Can I help you?
     M: Hello, my name is Mark Liberman...?
1.1. Compliance marking: rising declaratives

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(11) A: *(Receptionist)* Can I help you?  
     M: Hello, my name is Mark Liberman...?

(12) A: Bonjour!  
     B: Bonjour, I’d like... err... je veux... a black coffee?
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Westera (2013; in line with much earlier work):
  ▶ the final rise conveys a maxim suspension;
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(9)  A: (Enters with an umbrella.)
     B: It’s raining?                             Quality

(10) B: What do you think of your new neighbor?
     A: He’s attractive?                       Relation

(11) A: (Receptionist) Can I help you?
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Westera (2013; in line with much earlier work):
  ▶ the final rise conveys a maxim suspension;
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1.2. Phonological assumptions

From Gussenhoven 2004, simplified:

\[
\text{Intonation Phrase} = \left\{ \begin{array}{l}
\text{H*} \\
\text{L*}
\end{array} \right\}^n \left\{ \begin{array}{l}
\text{L\%} \\
\text{H\%} \\
\%
\end{array} \right\}
\]
1.2. Phonological assumptions

From Gussenhoven 2004, simplified:

Intonation Phrase = \( \left\{ \begin{array}{c} H^*(L) \\ L^*(H) \end{array} \right\}^n \left\{ \begin{array}{c} L\% \\ H\% \\ \% \end{array} \right\} \)

B: On an unrelated note, Fred is a vegetarian.

Remark: there are two variants:

▶ fall-rise: \( H^*L \ H\% \)

▶ rise-fall-rise: \( L^*HL \ H\% \) (= delayed fall-rise)

The difference will be orthogonal to current purposes. (Gussenhoven 1983, 2002: delay conveys extra significance.)
1.2. Phonological assumptions

From Gussenhoven 2004, simplified:

\[
\text{Intonation Phrase} = \left\{ \begin{array}{c}
H^{*}(L) \\
L^{*}(H)
\end{array} \right\}^n \left\{ \begin{array}{c}
L\% \\
H\%
\end{array} \right\}
\]

(3) B: On an unrelated note, Fred is a vegetarian.
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H*L
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H*L H%
H*L

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H*L  H%  H*L
H*L  H%  H*L
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From Gussenhoven 2004, simplified:

\[
\text{Intonation Phrase} = \left\{ \frac{H^*(L)}{L^*(H)} \right\}_n \left\{ \begin{array}{c} L\% \\ H\% \\ \% \end{array} \right\}
\]

(3) B: On an unrelated note, Fred is a vegetarian.

\[
\begin{array}{cccc}
H^*L & H\% & H^*L & H^*L \\
\end{array}
\]
1.2. Phonological assumptions

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\text{L}\% \\
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\[\begin{array}{c}
\text{H}\% \\
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\text{H*L} & \quad \text{H*L} & \quad \text{H*L} & \quad \text{L}\%
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1.3. Generalization to rising/falling accents

Generalizing Westera 2013 (following Hobbs 1990):

▶ like boundary tones (H%/L%), also trailing tones (L*H, H*L) convey (non-)compliance with the maxims.
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- like boundary tones \((H\%/L\%)\), also trailing tones \((L^*H, H^*L)\)
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**Question**

- Rise-fall-rise contains a high boundary and a low trailing tone...
1.3. Generalization to rising/falling accents

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- Rise-fall-rise contains a high boundary and a low trailing tone...
- ...but how can an utterance both comply and not comply?!
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**Some related questions:**

- How are the maxims defined?
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Question
- Rise-fall-rise contains a high boundary and a low trailing tone...
- ...but how can an utterance both comply and not comply?!

Some related questions:
- How are the maxims defined?
- Is compliance marked for the entire utterance or only some part?
(Non-)compliance with the maxims is indicated:

- relative to a \textit{QUD};
1.4. Intonational Compliance Marking (ICM)

(Non-)compliance with the maxims is indicated:

- relative to a QUd;
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**The ICM theory (Westera 2017):**

- L%: □ Maxims(\(Q\))
- H%: ¬□ Maxims(\(Q\))
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- L\%: $\Box \text{Maxims}(Q)$
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\textbf{The ICM theory (Westera 2017):}
  ▶ \textit{L\%: }\Box \text{Maxims}(Q_0)
  \hfill (Q_0 \text{ is the main } Q\text{UD})
  ▶ \textit{H\%: }\neg\Box \text{Maxims}(Q_0)
  ▶ \textit{-L: }\Box \text{Maxims}(Q)
  ▶ \textit{-H: }\neg\Box \text{Maxims}(Q)
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(Non-)compliance with the maxims is indicated:
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The ICM theory (Westera 2017):
▶ L%: □ Maxims(\(Q_0\)) \(\text{(}Q_0\text{ is the main QUD)}\)
▶ H%: \(\neg\square\) Maxims(\(Q_0\))
▶ -L: □ Maxims(\(Q_i\)) \(\text{(}Q_i\text{ is some QUD due to which the accented word is important)}\)
▶ -H: \(\neg\square\) Maxims(\(Q_i\))
1.4. Intonational Compliance Marking (ICM)

(Non-)compliance with the maxims is indicated:

- relative to a $Q_{UD}$;
- for the utterance up to (and including) the current intonation phrase.

**The ICM theory (Westera 2017):**

- $L\%$: $\Box$ Maxims($Q_0$) ($Q_0$ is the main $Q_{UD}$)
- $H\%$: $\neg\Box$ Maxims($Q_0$)
- $-L$: $\Box$ Maxims($Q_i$) ($Q_i$ is some $Q_{UD}$ due to which the accented word is *important*)
- $-H$: $\neg\Box$ Maxims($Q_i$)
1. Intonational Compliance Marking (Westera 2017)

2. Application to rise-fall-rise

3. Conclusion
2.1. Core prediction regarding RFR

**Prediction 1:** an utterance with RFR addresses a secondary $Q_1$. 
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(5)  A: Have you ever been West of the Mississippi?
     B: I’ve been to Missouri...

▶ To make the predictions of ICM more precise...
▶ we need a theory about which (combinations of) $Q$s are rational:
▶ for (5): $Q_1$ is part of a strategy for $Q_0$ (e.g., Roberts 1996);
▶ for (7): $Q_1$ serves common ground maintenance (e.g., Groenendijk & Roelofsen '09);
▶ for (6): Likewise (though potentially metalinguistic).
▶ For details see Westera 2017.
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**Prediction 1:** an utterance with RFR addresses a secondary QUaD $Q_1$.

(5) **A:** Have you ever been West of the Mississippi?  
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In each case:
- To make the predictions of ICM more precise...
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**Prediction 1:** an utterance with RFR addresses a secondary $Q_{UD} Q_1$.

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B: Eleven in the morning?!

In each case:

- To make the predictions of ICM more precise...
- we need a theory about which (combinations of) $Q_{UD}$s are rational:
  - for (5):

  ▶
  ▶
  ▶
  ▶
  ▶
  ▶
  ▶
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  - for (5): $Q_1$ is part of a *strategy* for $Q_0$ (e.g., Roberts 1996);
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  - for (5): $Q_1$ is part of a *strategy* for $Q_0$ (e.g., Roberts 1996);
  - for (7): $Q_1$ serves *common ground maintenance*  
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- we need a theory about which (combinations of) QUUDs are rational:
  - for (5): $Q_1$ is part of a *strategy* for $Q_0$ (e.g., Roberts 1996);
  - for (7): $Q_1$ serves *common ground maintenance* (e.g., Groenendijk & Roelofsen ’09);
  - for (6):
2.1. Core prediction regarding RFR

**Prediction 1:** an utterance with RFR addresses a secondary $Q_{UD} Q_1$.

(5) A: Have you ever been West of the Mississippi?  
   B: I’ve been to Missouri...

(7) A: So I guess you like [æ]pricots then?  
   B: I don’t like [æ]pricots – I like [ei]pricots!

(6) A: I’d like you here tomorrow morning at eleven.  
   B: Eleven in the morning?!

In each case:

- To make the predictions of ICM more precise...
- we need a theory about which (combinations of) $QUD$s are rational:
  - for (5): $Q_1$ is part of a *strategy* for $Q_0$ (e.g., Roberts 1996);
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  - for (6): Likewise (though potentially metalinguistic).
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In each case:

- To make the predictions of ICM more precise...
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- For details see Westera 2017.
2.2. Maxim suspension of RFR

Prediction 2: \( \neg \square \text{Maxims}(Q_0) \) and \( \square \text{Maxims}(Q_1) \).
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**Prediction 2:** \( \neg \Box \text{Maxims}(Q_0) \) and \( \Box \text{Maxims}(Q_1) \).

A consequence:

- if exhaustivity derives from the maxims, then...
- exhaustivity is predicted only relative to \( Q_1 \);
Prediction 2: $\neg \square \text{Maxims}(Q_0)$ and $\square \text{Maxims}(Q_1)$.

A consequence:

- if exhaustivity derives from the maxims, then...
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- in line with an observation by Wagner 2012:

$(13)$

A: Do you accept credit cards?
B: Visa and Mastercard…
2.2. Maxim suspension of RFR

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A consequence:
- if exhaustivity derives from the maxims, then...
- exhaustivity is predicted only relative to \( Q_1 \);
- in line with an observation by Wagner 2012:

(13) A: Do you accept credit cards?
    B: Visa and Mastercard...
    (implied: I accept no other cards; I’m unsure if issue underlying A’s question is resolved)
2.3. RFR and secondary information (1/2)

(5)  A: Have you ever been West of the Mississippi?
     B: I’ve been to Missouri...

Prediction 3: in an utterance that ends with L%, prefinal H% can be blamed only on Manner. That is:

▶ The first part of (7) doesn’t convey an intent for the main Qud; but (given H*L) it must convey some intent.

More generally, ICM predicts that RFR can mark secondary information:

(1)  B: John, who is a vegetarian, envies Fred.
(2)  B: John – he’s a vegetarian – envies Fred.
2.3. RFR and secondary information (1/2)

(5) A: Have you ever been West of the Mississippi?
   B: I’ve been to Missouri...

- in (5) the secondary QUD is addressed by the primary intent,
2.3. RFR and secondary information (1/2)

(5)  A: Have you ever been West of the Mississippi?
    B: I’ve been to Missouri...

▶ in (5) the secondary QUĐ is addressed by the primary intent, i.e., there is no “secondary information”;

(7)  A: So I guess you like [æ]pricots then?
    B: I don’t like [æ]pricots – I like [ei]pricots!

Prediction 3: in an utterance that ends with L%, prefinal H% can be blamed only on Manner.
That is:
▶ The first part of (7) doesn’t convey an intent for the main QUĐ;
2.3. RFR and secondary information (1/2)

(5)  A: Have you ever been West of the Mississippi?
    B: I’ve been to Missouri...

▷ in (5) the secondary QUD is addressed by the primary intent, i.e.,
there is no “secondary information”;
▷ in (7) this is different:

(7)  A: So I guess you like [æ]pricots then?
    B: I don’t like [æ]pricots – I like [ei]pricots!
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2.3. RFR and secondary information (1/2)

(5)  A: Have you ever been West of the Mississippi?
B: I’ve been to Missouri...

► in (5) the secondary Q{U}D is addressed by the primary intent, i.e.,
there is no “secondary information”;
► in (7) this is different:

(7)  A: So I guess you like [æ]pricots then?
B: I don’t like [æ]pricots – I like [ei]pricots!

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More generally, ICM predicts that RFR can mark secondary information:

(1)  B: John, who is a vegetarian, envies Fred.
(2)  B: John – he’s a vegetarian – envies Fred.
2.4. RFR and secondary information (2/2)

(3) B: On an unrelated note, Fred is a vegetarian.

(4) B: As for Fred, he ate the beans.
2.4. RFR and secondary information (2/2)

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These suggest that:

▶ it is rational to address, as a secondary QUD, one that serves to clarify (the contribution to) the main QUD.
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(4) B: As for Fred, he ate the beans.

These suggest that:

- it is rational to address, as a secondary QUD, one that serves to clarify (the contribution to) the main QUD.

(8) A: What about Fred, what did he eat?
B: Fred ate the beans.

- Given prediction 3, “Fred” must convey a (secondary) intent...
2.4. RFR and secondary information (2/2)

(3) B: On an unrelated note, Fred is a vegetarian.

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- it is rational to address, as a secondary QUd, one that serves to clarify (the contribution to) the main QUd.

(8) A: What about Fred, what did he eat?
   B: Fred, ate the beans.

- Given prediction 3, “Fred” must convey a (secondary) intent...
- plausibly, this can only be that the utterance is about Fred.
2.4. RFR and secondary information (2/2)

(3) B: On an unrelated note, Fred is a vegetarian.

(4) B: As for Fred, he ate the beans.

These suggest that:

▶ it is rational to address, as a secondary $QUD$, one that serves to clarify (the contribution to) the main $QUD$.

(8) A: What about Fred, what did he eat?
    B: Fred, ate the beans.

▶ Given prediction 3, “Fred” must convey a (secondary) intent...
▶ plausibly, this can only be $that$ the utterance is about Fred.

ICM predicts that (14) is $not$ the exact mirror image (contra Jackendoff 1972, in line with Wagner 2012):

(14) A: What about the beans, who ate those?
    B: Fred ate the beans...
1. Intonational Compliance Marking (Westera 2017)

2. Application to rise-fall-rise

3. Conclusion
3.1. Summary

- **Prediction 1**: an utterance with RFR addresses a secondary \( \text{QUD} \ Q_1 \), one due to which the accented word is important.
3.1. Summary

- **Prediction 1:** an utterance with RFR addresses a secondary $QUD Q_1$, one due to which the accented word is important.

- **Prediction 2:** $\neg\Box Maxims(Q_0)$ and $\Box Maxims(Q_1)$. 

**Take home message:** whenever you run into RFR, ask:

(i) What is the main $QUD$?

(ii) What is the secondary $QUD$?

(iii) Why is this a reasonable combination of $QUD$s?
3.1. Summary

- **Prediction 1:** an utterance with RFR addresses a secondary \( Q_1 \), one due to which the accented word is important.

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- **Prediction 3:** in an utterance that ends with L\%, prefinal H\% can be blamed only on Manner.

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(i) What is the main $QU_D$?

(ii) What is the secondary $QU_D$?
3.1. Summary

- **Prediction 1:** an utterance with RFR addresses a secondary $Q_{UD \ Q_1}$, one due to which the accented word is important.

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- **Prediction 3:** in an utterance that ends with L%, prefinal H% can be blamed only on Manner.

**Take home message:** whenever you run into RFR, ask:

(i) What is the main $Q_{UD}$?

(ii) What is the secondary $Q_{UD}$?

(iii) Why is this a reasonable combination of $Q_{UDS}$?
3.2. (Very brief) comparison to previous work

Previous proposals:
  ▶ RFR conveys (three types of) *uncertain relevance* or *incredulity* (Ward and Hirschberg 1985, 1986).
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In a nutshell:

- to the extent that previous proposals are adequate,
- ICM generates their core insights from more basic assumptions,
- while also doing some things differently.
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- RFR conveys (three types of) *uncertain relevance* or *incredulity* (Ward and Hirschberg 1985, 1986).
- RFR conveys *selection* of material from the context (Brazil 1975, Gussenhoven 1983, Steedman 2014).

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References (2/2)

Appendix A. The maxims

For a proposition $p$ and a QUD $Q$ ($\langle\langle s, t \rangle, t \rangle$):
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For a proposition $p$ and a QUUD $Q (\langle s, t \rangle, t)$:

$\text{Quality}(p) = \square^\vee p$
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For a proposition $p$ and a QUUD $Q$ ($\langle\langle s, t \rangle, t \rangle$):

\[
\text{Quality}(p) = \square^\vee p \\
\text{Relation}(Q, p) = p \in Q
\]
Appendix A. The maxims

For a proposition $p$ and a $\text{QUD } Q (\langle s, t \rangle, t)$:

\[
\begin{align*}
\text{Quality}(p) &= \square^\uparrow p \\
\text{Relation}(Q, p) &= p \in Q \\
\text{Quantity}(Q, p) &= \forall q \left( \left( \text{Quality}(q) \land \text{Relation}(Q, q) \right) \rightarrow (p \subseteq q) \right)
\end{align*}
\]
Appendix A. The maxims

For a proposition \( p \) and a \( \text{QUd} \) \( Q \) (\( \langle \langle s, t \rangle, t \rangle \)):

\[
\begin{align*}
\text{Quality}(p) &= \Box^\vee p \\
\text{Relation}(Q, p) &= p \in Q \\
\text{Quantity}(Q, p) &= \forall q \left( \left( \text{Quality}(q) \land \text{Relation}(Q, q) \right) \to (p \subseteq q) \right) \\
\text{Manner}(p) &= \Box(p \in \text{Intents})
\end{align*}
\]

\( \Box = \text{common knowledge} \)
Appendix A. The maxims (*some* of them)

For a proposition \( p \) and a QUD \( Q (\langle \langle s, t \rangle, t \rangle) \):

\[
\begin{align*}
\text{Quality}(p) &= \Box \forall p \\
\text{Relation}(Q, p) &= p \in Q \\
\text{Quantity}(Q, p) &= \forall q \left( \left( \text{Quality}(q) \land \text{Relation}(Q, q) \right) \rightarrow (p \subseteq q) \right) \\
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\end{align*}
\]
Appendix A. The maxims (some of them)

For a proposition $p$ and a QUd $Q$ (⟨⟨s, t⟩, t⟩):

\[
\begin{align*}
\text{Quality}(p) &= \Box \lor p \\
\text{Relation}(Q, p) &= p \in Q \\
\text{Quantity}(Q, p) &= \forall q \left( \left( \text{Quality}(q) \land \text{Relation}(Q, q) \right) \rightarrow (p \subseteq q) \right) \\
\text{Manner}(p) &= \Box (p \in \text{Intents}) \quad (\Box = \text{common knowledge})
\end{align*}
\]

\[
\text{Maxims}(Q) = \exists p \left( \begin{array}{c}
\text{Quality}(p) \land \\
\text{Relation}(Q, p) \land \\
\text{Quantity}(Q, p) \land \\
\text{Manner}(p)
\end{array} \right)
\]
Appendix C. Framework

goals  beliefs

what is uttered
Appendix C. Framework

cognitive science

goals  beliefs

what is uttered

syntax, phonology, etc.

observable reality

models
Appendix C. Framework

goals    beliefs

what is uttered
Appendix C. Framework

goals

what is meant

beliefs

what is said

what is uttered
Appendix C. Framework

goals \rightarrow \text{beliefs}

\text{intents}

\text{contents}

\text{what is uttered}
Appendix C. Framework

- contents
- intents
- beliefs
- goals

what is uttered
Appendix C. Framework

- contents
- QUDs
- beliefs
- intents
- goals
- what is uttered
Appendix C. Framework

goals

QUDs

beliefs

intents

contents

what is uttered

Semantics
Appendix C. Framework

goals

QUDs

beliefs

intents

contents

what is uttered

Semantics

MANNER
Appendix C. Framework

goals

QUDS

Q U A L I T Y
Q U A N T I T Y
R E L A T I O N

M A N N E R

contents

Semantics

what is uttered

intents

beliefs
Appendix C. Framework

- contents
- intents
- beliefs
- goals

- strategies, etc.
- QUALITY
- QUANTITY
- RELATION
- MANNER
- Semantics

what is uttered
Appendix C. Framework

- contents
- intents
- beliefs
- goals

QUDs

- strategies, etc.
- (rhetorical relations?)

QUALITY

- QUANTITY

MANNER

RELATION

Semantics

what is uttered