Explaining at-issueness contrasts between questions and assertions

Matthijs Westera

Institute for Logic, Language and Computation
University of Amsterdam

Theoretical and experimental approaches
to presuppositions, Genoa, March 2017

This talk

(1) a. John was there, or Mary. (L%)

b. Was John there, or Mary? (L%)

This talk

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

This talk

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

This talk

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

This talk

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

This talk

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

Main goal: To offer an explanation for:

- the presence of these implications; and
- the at-issueness contrast.

Explaining at-issueness contrasts between questions and assertions

Matthijs Westera

Institute for Logic, Language and Computation
University of Amsterdam

Theoretical and experimental approaches
to presuppositions, Genoa, March 2017

Outline

1. The empirical picture
2. Exclusivity
3. Sufficiency
4. Conclusion

Outline

1.1. Exclusivity and sufficiency

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

1.1. Exclusivity and sufficiency

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

This pattern is commonly acknowledged, e.g.:

- for (1a) the exclusivity would be a "scalar implicature";
- for (1b) see, e.g., Bartels 1999, Biezma & Rawlins 2012, Roelofsen & Farkas 2015.

1.2. At-issueness contrast

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

1.2. At-issueness contrast

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- The (non-)at-issueness is likewise commonly assumed:
  - exclusivity of (1a) would be a *conversational implicature*;

1.2. At-issueness contrast

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- The (non-)at-issueness is likewise commonly assumed:
  - exclusivity of (1a) would be a *conversational implicature*;
  - sufficiency of (1a) is simply what is asserted;

1.2. At-issueness contrast

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- The (non-)at-issueness is likewise commonly assumed:
  - exclusivity of (1a) would be a *conversational implicature*;
  - sufficiency of (1a) is simply what is asserted;
  - exclusivity & sufficiency of (1b) are considered *presupposed* (e.g., Bartels 1999, Aloni & Égré 2008, Biezma and Rawlins 2012).

1.2. At-issueness contrast

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- The (non-)at-issueness is likewise commonly assumed:
  - exclusivity of (1a) would be a *conversational implicature*;
  - sufficiency of (1a) is simply what is asserted;
  - exclusivity & sufficiency of (1b) are considered *presupposed* (e.g., Bartels 1999, Aloni & Égré 2008, Biezma and Rawlins 2012).
- It is suggested also by a contrast in the suitability of "yes" / "no":

(2) a. John was there, or Mary. – Yes, not both. / No, both.
– Yes, J. or M. / No, neither.

b. Was John there, or Mary?

1.2. At-issueness contrast

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- The (non-)at-issueness is likewise commonly assumed:
  - exclusivity of (1a) would be a *conversational implicature*;
  - sufficiency of (1a) is simply what is asserted;
  - exclusivity & sufficiency of (1b) are considered *presupposed* (e.g., Bartels 1999, Aloni & Égré 2008, Biezma and Rawlins 2012).
- It is suggested also by a contrast in the suitability of "yes" / "no":

(2) a. John was there, or Mary. – Yes, not both. / No, both.
– Yes, J. or M. / No, neither.

b. Was John there, or Mary? – (?) Yes, not both. / (?) No, both.

1.2. At-issueness contrast

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- The (non-)at-issueness is likewise commonly assumed:
  - exclusivity of (1a) would be a *conversational implicature*;
  - sufficiency of (1a) is simply what is asserted;
  - exclusivity & sufficiency of (1b) are considered *presupposed* (e.g., Bartels 1999, Aloni & Égré 2008, Biezma and Rawlins 2012).
- It is suggested also by a contrast in the suitability of "yes" / "no":

(2) a. John was there, or Mary.
– Yes, not both. / No, both.
– Yes, J. or M. / No, neither.

b. Was John there, or Mary?
– (?) Yes, not both. / (?) No, both.
– (?) Yes, J. or M. / (?) No, neither.

1.2. At-issueness contrast

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- The (non-)at-issueness is likewise commonly assumed:
  - exclusivity of (1a) would be a *conversational implicature*;
  - sufficiency of (1a) is simply what is asserted;
  - exclusivity & sufficiency of (1b) are considered *presupposed* (e.g., Bartels 1999, Aloni & Égré 2008, Biezma and Rawlins 2012).
- It is suggested also by a contrast in the suitability of "yes" / "no":

(2) a. John was there, or Mary.
– Yes, not both. / No, both.
– Yes, J. or M. / No, neither.

b. Was John there, or Mary?
– (?) Yes, not both. / (?) No, both.
– (?) Yes, J. or M. / (?) No, neither.

(cf. Destruel et al. 2015; Roelofsen and Farkas 2015.)

1.3. Starting point

I assume two differences between questions and assertions:

1.3. Starting point

I assume two differences between questions and assertions:

- **Question intent:**
  Assertions have a primary communicative intention to inform; questions lack such an intention.

1.3. Starting point

I assume two differences between questions and assertions:

- **Question intent:**
  Assertions have a primary communicative intention to inform;
  questions lack such an intention.

- **Question newness:**
  Assertions tend to address prior QUDs;
  questions tend to introduce new QUDs.

Outline

2.1. General approach to exclusivity

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

2.1. General approach to exclusivity

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

2.1. General approach to exclusivity

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

Let us aim for a pragmatic explanation.

2.1. General approach to exclusivity

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

Let us aim for a pragmatic explanation. However:

- the *standard recipe*, based on Quantity, doesn't generalize to (1b);

2.1. General approach to exclusivity

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

Let us aim for a pragmatic explanation. However:

- the *standard recipe*, based on Quantity, doesn't generalize to (1b);
- after all, (1b) lacks an informational intent for Quantity to apply to (given assumption Question intent);

2.1. General approach to exclusivity

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

Let us aim for a pragmatic explanation. However:

- the *standard recipe*, based on Quantity, doesn't generalize to (1b);
- after all, (1b) lacks an informational intent for Quantity to apply to (given assumption Question intent);
- (moreover, the standard recipe is inadequate even for (1a).)

2.1. General approach to exclusivity

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

Let us aim for a pragmatic explanation. However:

- the *standard recipe*, based on Quantity, doesn't generalize to (1b);
- after all, (1b) lacks an informational intent for Quantity to apply to (given assumption Question intent);
- (moreover, the standard recipe is inadequate even for (1a).)

Instead let us adopt **Attentional Pragmatics**

2.1. General approach to exclusivity

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

Let us aim for a pragmatic explanation. However:

- the *standard recipe*, based on Quantity, doesn't generalize to (1b);
- after all, (1b) lacks an informational intent for Quantity to apply to (given assumption Question intent);
- (moreover, the standard recipe is inadequate even for (1a).)

Instead let us adopt **Attentional Pragmatics** (Westera, 2017).

2.1. General approach to exclusivity

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

Let us aim for a pragmatic explanation. However:

- the *standard recipe*, based on Quantity, doesn't generalize to (1b);
- after all, (1b) lacks an informational intent for Quantity to apply to (given assumption Question intent);
- (moreover, the standard recipe is inadequate even for (1a).)

Instead let us adopt **Attentional Pragmatics** (Westera, 2017).

Attentional intent: a set of things to which the speaker intends to draw the audience's attention.

2.2. Formal definition (1/2): information-maxims

I-maxims: For an informational intent p and a QUD $\mathcal{Q}$:

2.2. Formal definition (1/2): information-maxims

I-maxims: For an informational intent p and a QUD $\mathcal{Q}$:

I-Quality(p) $= \Box^{\vee} p$

2.2. Formal definition (1/2): information-maxims

I-maxims: For an informational intent p and a QUD $\mathcal{Q}$:

I-Quality$(p) = \Box^{\vee} p$

I-Relation$(\mathcal{Q}, p) = \mathcal{Q}(p)$

2.2. Formal definition (1/2): information-maxims

I-maxims: For an informational intent p and a QUD $\mathcal{Q}$:

$$\text{I-Quality}(p) = \square^{\vee} p$$

$$\text{I-Relation}(\mathcal{Q}, p) = \mathcal{Q}(p)$$

$$\text{I-Quantity}(\mathcal{Q}, p) = \forall q \left(\left(\begin{array}{c} \text{I-Quality}(q) \wedge \\ \text{I-Relation}(\mathcal{Q}, q) \end{array} \right) \rightarrow (p \subseteq q) \right)$$

2.2. Formal definition (1/2): information-maxims

I-maxims: For an informational intent p and a QUD $\mathcal{Q}$:

$$\text{I-Quality}(p) = \Box^{\vee} p$$

$$\text{I-Relation}(\mathcal{Q}, p) = \mathcal{Q}(p)$$

$$\text{I-Quantity}(\mathcal{Q}, p) = \forall q \left(\left(\begin{array}{c} \text{I-Quality}(q) \wedge \\ \text{I-Relation}(\mathcal{Q}, q) \end{array} \right) \rightarrow (p \subseteq q) \right)$$

Alternative, equivalent formulation of I-Quantity:

$$\text{I-Quantity}(\mathcal{Q}, p) = \forall q \left(\left(\mathcal{Q}(q) \wedge p \not\subseteq q \right) \rightarrow \neg \Box^{\vee} q \right)$$

2.2. Formal definition (1/2): information-maxims

I-maxims: For an informational intent p and a QUD $\mathcal{Q}$:

$$\text{I-Quality}(p) = \Box^{\vee} p$$

$$\text{I-Relation}(\mathcal{Q}, p) = \mathcal{Q}(p)$$

$$\text{I-Quantity}(\mathcal{Q}, p) = \forall q \left(\left(\begin{array}{c} \text{I-Quality}(q) \wedge \\ \text{I-Relation}(\mathcal{Q}, q) \end{array} \right) \rightarrow (p \subseteq q) \right)$$

Alternative, equivalent formulation of I-Quantity:

$$\text{I-Quantity}(\mathcal{Q}, p) = \forall q \left(\left(\mathcal{Q}(q) \wedge p \not\subseteq q \right) \rightarrow \neg \Box^{\vee} q \right)$$

- The starting point for the standard recipe.

2.3. Formal definition (2/2): attention-maxims

A-maxims: For an attentional intent $\mathcal{A}$ and a $\textsc{Qud}$ $\mathcal{Q}$:

A-Quality($\mathcal{A}$)

A-Relation($\mathcal{Q}, \mathcal{A}$)

A-Quantity($\mathcal{Q}, \mathcal{A}$)

2.3. Formal definition (2/2): attention-maxims

A-maxims: For an attentional intent $\mathcal{A}$ and a $\textsc{Qud}$ $\mathcal{Q}$:

A-Quality$(\mathcal{A}) = \forall a\,(\mathcal{A}(a) \rightarrow \Diamond^{\vee} a)$ *(simplified)*

A-Relation$(\mathcal{Q}, \mathcal{A})$

A-Quantity$(\mathcal{Q}, \mathcal{A})$

2.3. Formal definition (2/2): attention-maxims

A-maxims: For an attentional intent $\mathcal{A}$ and a $\textsc{Qud}$ $\mathcal{Q}$:

A-Quality$(\mathcal{A}) = \forall a\,(\mathcal{A}(a) \rightarrow \Diamond^{\vee} a)$ *(simplified)*

A-Relation$(\mathcal{Q}, \mathcal{A}) = \forall a(\mathcal{A}(a) \rightarrow \mathcal{Q}(a))$

A-Quantity$(\mathcal{Q}, \mathcal{A})$

2.3. Formal definition (2/2): attention-maxims

A-maxims: For an attentional intent $\mathcal{A}$ and a $\textsc{Qud}$ $\mathcal{Q}$:

$$\text{A-Quality}(\mathcal{A}) = \forall a\,(\mathcal{A}(a) \rightarrow \Diamond^{\vee} a) \qquad \textit{(simplified)}$$

$$\text{A-Relation}(\mathcal{Q}, \mathcal{A}) = \forall a(\mathcal{A}(a) \rightarrow \mathcal{Q}(a))$$

$$\text{A-Quantity}(\mathcal{Q}, \mathcal{A}) = \forall a\left(\left(\begin{array}{c}\text{A-Quality}(\{a\}) \wedge \\ \text{A-Relation}(\mathcal{Q}, \{a\})\end{array}\right) \rightarrow \mathcal{A}(a)\right)$$

2.3. Formal definition (2/2): attention-maxims

A-maxims: For an attentional intent $\mathcal{A}$ and a $\textsc{Qud}$ $\mathcal{Q}$:

$$\text{A-Quality}(\mathcal{A}) = \forall a\,(\mathcal{A}(a) \rightarrow \Diamond^{\vee} a) \qquad \textit{(simplified)}$$

$$\text{A-Relation}(\mathcal{Q}, \mathcal{A}) = \forall a(\mathcal{A}(a) \rightarrow \mathcal{Q}(a))$$

$$\text{A-Quantity}(\mathcal{Q}, \mathcal{A}) = \forall a\left(\left(\begin{array}{c}\text{A-Quality}(\{a\}) \wedge \\ \text{A-Relation}(\mathcal{Q}, \{a\})\end{array}\right) \rightarrow \mathcal{A}(a)\right)$$

Alternative, equivalent formulation of A-Quantity:

$$\text{A-Quantity}(\mathcal{Q}, \mathcal{A}) = \forall a\,((\mathcal{Q}(a) \wedge \neg\mathcal{A}(a)) \rightarrow \neg\Diamond^{\vee} a)$$

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{\hat{}Pj, \hat{}Pm\}$;

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{^Pj, ^Pm\}$;
  - **QUD**: A-Relation implies that $\mathcal{Q} = \{^Pj, ^Pm, \ldots\}$;

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{^Pj, ^Pm\}$;
  - **QUD**: A-Relation implies that $\mathcal{Q} = \{^Pj, ^Pm, \ldots\}$;
  - A-Quantity implies that $^(Pj \wedge Pm)$ is either *irrelevant* or *impossible*.

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{^Pj, ^Pm\}$;
  - **QUD**: A-Relation implies that $\mathcal{Q} = \{^Pj, ^Pm, \ldots\}$;
  - A-Quantity implies that $^(Pj \wedge Pm)$ is either *irrelevant* or *impossible*.
- On top of this, let us assume:
  - **Closure:** QUDs are typically closed under intersection

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{^Pj, ^Pm\}$;
  - **QUD**: A-Relation implies that $\mathcal{Q} = \{^Pj, ^Pm, \ldots\}$;
  - A-Quantity implies that $^(Pj \wedge Pm)$ is either *irrelevant* or *impossible*.
- On top of this, let us assume:
  - **Closure:** QUDs are typically closed under intersection, modulo:
  - **Achievability:** (e.g., Cohen & Levesque 1990)
    Who introduces a QUD should consider all its propositions possible;

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{^Pj, ^Pm\}$;
  - **QUD**: A-Relation implies that $\mathcal{Q} = \{^Pj, ^Pm, \ldots\}$;
  - A-Quantity implies that $^(Pj \wedge Pm)$ is either *irrelevant* or *impossible*.
- On top of this, let us assume:
  - **Closure:** QUDs are typically closed under intersection, modulo:
  - **Achievability:** (e.g., Cohen & Levesque 1990)
    Who introduces a QUD should consider all its propositions possible;
  - Question newness: questions tend to introduce new QUDs.

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{^Pj, ^Pm\}$;
  - **QUD**: A-Relation implies that $\mathcal{Q} = \{^Pj, ^Pm, \ldots\}$;
  - A-Quantity implies that $^(Pj \wedge Pm)$ is either *irrelevant* or *impossible*.
- On top of this, let us assume:
  - **Closure:** QUDs are typically closed under intersection, modulo:
  - **Achievability:** (e.g., Cohen & Levesque 1990)
    Who introduces a QUD should consider all its propositions possible;
  - Question newness: questions tend to introduce new QUDs.
- Now, for (1a):
  - Nothing prevents Closure, hence $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{^Pj, ^Pm\}$;
  - **QUD**: A-Relation implies that $\mathcal{Q} = \{^Pj, ^Pm, \ldots\}$;
  - A-Quantity implies that $^(Pj \wedge Pm)$ is either *irrelevant* or *impossible*.
- On top of this, let us assume:
  - **Closure:** QUDs are typically closed under intersection, modulo:
  - **Achievability:** (e.g., Cohen & Levesque 1990)
    Who introduces a QUD should consider all its propositions possible;
  - Question newness: questions tend to introduce new QUDs.
- Now, for (1a):
  - Nothing prevents Closure, hence $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;
  - and given this QUD, $\neg\Diamond(Pj \wedge Pm)$ derives from A-Quantity.

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{^Pj, ^Pm\}$;
  - **QUD**: A-Relation implies that $\mathcal{Q} = \{^Pj, ^Pm, \ldots\}$;
  - A-Quantity implies that $^(Pj \wedge Pm)$ is either *irrelevant* or *impossible*.
- On top of this, let us assume:
  - **Closure:** QUDs are typically closed under intersection, modulo:
  - **Achievability:** (e.g., Cohen & Levesque 1990)
    Who introduces a QUD should consider all its propositions possible;
  - Question newness: questions tend to introduce new QUDs.
- Now, for (1a):
  - Nothing prevents Closure, hence $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;
  - and given this QUD, $\neg\Diamond(Pj \wedge Pm)$ derives from A-Quantity.
- But for (1b), given Question newness:
  - Closure would violate Achievability, hence $\mathcal{Q} = \{^Pj, ^Pm\}$;

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{^Pj, ^Pm\}$;
  - **QUD**: A-Relation implies that $\mathcal{Q} = \{^Pj, ^Pm, \ldots\}$;
  - A-Quantity implies that $^(Pj \wedge Pm)$ is either *irrelevant* or *impossible*.
- On top of this, let us assume:
  - **Closure:** QUDs are typically closed under intersection, modulo:
  - **Achievability:** (e.g., Cohen & Levesque 1990)
    Who introduces a QUD should consider all its propositions possible;
  - Question newness: questions tend to introduce new QUDs.
- Now, for (1a):
  - Nothing prevents Closure, hence $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;
  - and given this QUD, $\neg\Diamond(Pj \wedge Pm)$ derives from A-Quantity.
- But for (1b), given Question newness:
  - Closure would violate Achievability, hence $\mathcal{Q} = \{^Pj, ^Pm\}$;
  - and given this QUD, $\neg\Diamond(Pj \wedge Pm)$ derives from the lack of closure.

2.4. Explaining the exclusivity

(1) a. John was there, or Mary. (L%)
b. Was John there, or Mary? (L%)

- For (1a) and (1b) alike:
  - **Attentional intent**: let us assume $\mathcal{A} = \{^Pj, ^Pm\}$;
  - **QUD**: A-Relation implies that $\mathcal{Q} = \{^Pj, ^Pm, \ldots\}$;
  - A-Quantity implies that $^(Pj \wedge Pm)$ is either *irrelevant* or *impossible*.
- On top of this, let us assume:
  - **Closure:** QUDs are typically closed under intersection, modulo:
  - **Achievability:** (e.g., Cohen & Levesque 1990)
    Who introduces a QUD should consider all its propositions possible;
  - Question newness: questions tend to introduce new QUDs.
- Now, for (1a):
  - Nothing prevents Closure, hence $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;
  - and given this QUD, $\neg\Diamond(Pj \wedge Pm)$ derives from A-Quantity.
- But for (1b), given Question newness:
  - Closure would violate Achievability, hence $\mathcal{Q} = \{^Pj, ^Pm\}$;
  - and given this QUD, $\neg\Diamond(Pj \wedge Pm)$ derives from the lack of closure.

Having these two routes to exclusivity bears on the at-issueness contrast...

2.5. Explaining the (non-)at-issueness of exclusivity

- Thus we predict:
  - For (1a): $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;
  - For (1b): $\mathcal{Q} = \{^Pj, ^Pm\}$.

2.5. Explaining the (non-)at-issueness of exclusivity

- Thus we predict:
  - For (1a): $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;
  - For (1b): $\mathcal{Q} = \{^Pj, ^Pm\}$.

Proposal:

- **Asymmetry thesis** (Horn, 1989):
  negative info tends to be relevant only for discourse-internal reasons;

2.5. Explaining the (non-)at-issueness of exclusivity

- Thus we predict:
  - For (1a): $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;
  - For (1b): $\mathcal{Q} = \{^Pj, ^Pm\}$.

Proposal:

- **Asymmetry thesis** (Horn, 1989):
  negative info tends to be relevant only for discourse-internal reasons;
  - e.g., "the earlier consideration of its positive counterpart".

2.5. Explaining the (non-)at-issueness of exclusivity

- Thus we predict:
  - For (1a): $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;
  - For (1b): $\mathcal{Q} = \{^Pj, ^Pm\}$.

Proposal:

- **Asymmetry thesis** (Horn, 1989):
  negative info tends to be relevant only for discourse-internal reasons;
  - e.g., "the earlier consideration of its positive counterpart".
- **Goal pruning:** given a main QUD $\mathcal{Q}$, there is always a side-QUD $\mathcal{Q}'$ containing the negations of $p \in \mathcal{Q}$.

2.5. Explaining the (non-)at-issueness of exclusivity

- Thus we predict:
  - For (1a): $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;
  - For (1b): $\mathcal{Q} = \{^Pj, ^Pm\}$.

Proposal:

- **Asymmetry thesis** (Horn, 1989):
  negative info tends to be relevant only for discourse-internal reasons;
  - e.g., "the earlier consideration of its positive counterpart".
- **Goal pruning:** given a main QUD $\mathcal{Q}$, there is always a side-QUD $\mathcal{Q}'$ containing the negations of $p \in \mathcal{Q}$.
- It follows that there is a side-QUD in (1a) containing the exclusivity, but not in (1b) – and this explains the contrast!

2.5. Explaining the (non-)at-issueness of exclusivity

- Thus we predict:
  - For (1a): $\mathcal{Q} = \{^Pj, ^Pm, ^(Pj \wedge Pm), \ldots\}$;
  - For (1b): $\mathcal{Q} = \{^Pj, ^Pm\}$.

Proposal:

- **Asymmetry thesis** (Horn, 1989):
  negative info tends to be relevant only for discourse-internal reasons;
  - e.g., "the earlier consideration of its positive counterpart".
- **Goal pruning:** given a main QUD $\mathcal{Q}$, there is always a side-QUD $\mathcal{Q}'$ containing the negations of $p \in \mathcal{Q}$.
- It follows that there is a side-QUD in (1a) containing the exclusivity, but not in (1b) – and this explains the contrast!

In a more intuitive nutshell:

- when introducing a new QUD there are no prior goals to prune.

Outline

3.1. Explaining sufficiency

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

3.1. Explaining sufficiency

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither*

3.1. Explaining sufficiency

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

3.1. Explaining sufficiency

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

Again, we aim for a (mostly) pragmatic explanation.

3.1. Explaining sufficiency

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

Again, we aim for a (mostly) pragmatic explanation.

- For (1a):
  - sufficiency is simply its main informational intent;
  - hence the sufficiency implication derives from I-Quality.

3.1. Explaining sufficiency

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

Again, we aim for a (mostly) pragmatic explanation.

- For (1a):
  - sufficiency is simply its main informational intent;
  - hence the sufficiency implication derives from I-Quality.
- For (1b):
  - it lacks such an informational intent (as assumed in Question intent)

3.1. Explaining sufficiency

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

Again, we aim for a (mostly) pragmatic explanation.

- For (1a):
  - sufficiency is simply its main informational intent;
  - hence the sufficiency implication derives from I-Quality.
- For (1b):
  - it lacks such an informational intent (as assumed in Question intent)
  - this immediately accounts for the difference in at-issueness;

3.1. Explaining sufficiency

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both*
- **Sufficiency:** *not neither* (i.e., at least one)

Again, we aim for a (mostly) pragmatic explanation.

- For (1a):
  - sufficiency is simply its main informational intent;
  - hence the sufficiency implication derives from I-Quality.
- For (1b):
  - it lacks such an informational intent (as assumed in Question intent)
  - this immediately accounts for the difference in at-issueness;
  - but we still need to explain the sufficiency implication of (1b)...

3.2. Sufficiency of (1b)

Now, recall from earlier:

- Question newness:
  Questions tend to introduce new QUDs; assertions address prior QUDs.

3.2. Sufficiency of (1b)

Now, recall from earlier:

- Question newness:
  Questions tend to introduce new QUDs; assertions address prior QUDs.

And let us add one additional assumption:

- **Maximizing expected compliance:** (cf. Groenendijk & Roelofsen '09)
  When introducing a new QUD, the speaker tries to ensure that it can be compliantly addressed by the next speaker.

3.2. Sufficiency of (1b)

Now, recall from earlier:

- Question newness:
  Questions tend to introduce new QUDs; assertions address prior QUDs.

And let us add one additional assumption:

- **Maximizing expected compliance:** (cf. Groenendijk & Roelofsen '09)
  When introducing a new QUD, the speaker tries to ensure that it can be compliantly addressed by the next speaker.

From these combined it follows that:

- the QUD of a question must be taken to contain a true proposition.

3.2. Sufficiency of (1b)

Now, recall from earlier:

- Question newness:
  Questions tend to introduce new QUDs; assertions address prior QUDs.

And let us add one additional assumption:

- **Maximizing expected compliance:** (cf. Groenendijk & Roelofsen '09)
  When introducing a new QUD, the speaker tries to ensure that it can be compliantly addressed by the next speaker.

From these combined it follows that:

- the QUD of a question must be taken to contain a true proposition.

This accounts for the sufficiency implication.

3.2. Sufficiency of (1b)

Now, recall from earlier:

- Question newness:
  Questions tend to introduce new QUDs; assertions address prior QUDs.

And let us add one additional assumption:

- **Maximizing expected compliance:** (cf. Groenendijk & Roelofsen '09)
  When introducing a new QUD, the speaker tries to ensure that it can be compliantly addressed by the next speaker.

From these combined it follows that:

- the QUD of a question must be taken to contain a true proposition.

This accounts for the sufficiency implication.

- *Intuitively:* the speaker could have added "or neither", but didn't.

Outline

4.1. The explanations in a nutshell

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

4.1. The explanations in a nutshell

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- **Exclusivity:**
  - (1a) implies "not both" because the attentional intent lacks "both";

4.1. The explanations in a nutshell

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- **Exclusivity:**
  - (1a) implies "not both" because the attentional intent lacks "both";
  - (1b) implies "not both" because the QUD lacks "both";

4.1. The explanations in a nutshell

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- **Exclusivity:**
  - (1a) implies "not both" because the attentional intent lacks "both";
  - (1b) implies "not both" because the QUD lacks "both";
  - at-issueness contrast due to presence/absence of a goal to prune.

4.1. The explanations in a nutshell

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- **Exclusivity:**
  - (1a) implies "not both" because the attentional intent lacks "both";
  - (1b) implies "not both" because the QUD lacks "both";
  - at-issueness contrast due to presence/absence of a goal to prune.
- **Sufficiency:**
  - (1a) implies "not neither" because that's what it asserts;

4.1. The explanations in a nutshell

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- **Exclusivity:**
  - (1a) implies "not both" because the attentional intent lacks "both";
  - (1b) implies "not both" because the QUD lacks "both";
  - at-issueness contrast due to presence/absence of a goal to prune.
- **Sufficiency:**
  - (1a) implies "not neither" because that's what it asserts;
  - (1b) implies "not neither" because the QUD lacks "neither";

4.1. The explanations in a nutshell

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- **Exclusivity:**
  - (1a) implies "not both" because the attentional intent lacks "both";
  - (1b) implies "not both" because the QUD lacks "both";
  - at-issueness contrast due to presence/absence of a goal to prune.
- **Sufficiency:**
  - (1a) implies "not neither" because that's what it asserts;
  - (1b) implies "not neither" because the QUD lacks "neither";
  - at-issueness contrast due to presence/absence of main informational intent;

4.1. The explanations in a nutshell

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- **Exclusivity:**
  - (1a) implies "not both" because the attentional intent lacks "both";
  - (1b) implies "not both" because the QUD lacks "both";
  - at-issueness contrast due to presence/absence of a goal to prune.
- **Sufficiency:**
  - (1a) implies "not neither" because that's what it asserts;
  - (1b) implies "not neither" because the QUD lacks "neither";
  - at-issueness contrast due to presence/absence of main informational intent;
- **Required assumptions:**
  - Attentional Pragmatics;

4.1. The explanations in a nutshell

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- **Exclusivity:**
  - (1a) implies "not both" because the attentional intent lacks "both";
  - (1b) implies "not both" because the QUD lacks "both";
  - at-issueness contrast due to presence/absence of a goal to prune.
- **Sufficiency:**
  - (1a) implies "not neither" because that's what it asserts;
  - (1b) implies "not neither" because the QUD lacks "neither";
  - at-issueness contrast due to presence/absence of main informational intent;
- **Required assumptions:**
  - Attentional Pragmatics;
  - Question newness, Question intent;

4.1. The explanations in a nutshell

(1) a. John was there, or Mary. (L%)

- **Exclusivity:** *not both* (at-issue)
- **Sufficiency:** *not neither* (at-issue)

b. Was John there, or Mary? (L%)

- **Exclusivity:** *not both* (non-at-issue)
- **Sufficiency:** *not neither* (non-at-issue)

- **Exclusivity:**
  - (1a) implies "not both" because the attentional intent lacks "both";
  - (1b) implies "not both" because the QUD lacks "both";
  - at-issueness contrast due to presence/absence of a goal to prune.
- **Sufficiency:**
  - (1a) implies "not neither" because that's what it asserts;
  - (1b) implies "not neither" because the QUD lacks "neither";
  - at-issueness contrast due to presence/absence of main informational intent;
- **Required assumptions:**
  - Attentional Pragmatics;
  - Question newness, Question intent;
  - Closure modulo Achievability, Maximize expected compliance, Goal pruning (Asymmetry thesis).

4.2. Take-home messages

- The presence of an implication and its (non-)at-issueness demand separate explanations.

4.2. Take-home messages

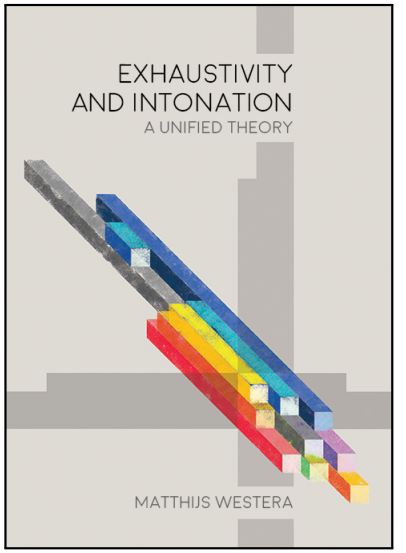
- The presence of an implication and its (non-)at-issueness demand separate explanations.
- To explain why an implication is at issue, we must know *which issue* and *why it's there*.

4.2. Take-home messages

- The presence of an implication and its (non-)at-issueness demand separate explanations.
- To explain why an implication is at issue, we must know *which issue* and *why it's there*.
- Exclusivity of questions supports the thesis that *exhaustivity is a matter of attention*, not information.

4.2. Take-home messages

- The presence of an implication and its (non-)at-issueness demand separate explanations.
- To explain why an implication is at issue, we must know *which issue* and *why it's there*.
- Exclusivity of questions supports the thesis that *exhaustivity is a matter of attention*, not information.



References

- Aloni, M., & Égré, P. (2010). Alternative questions and knowledge attributions. The Philosophical Quarterly, 60(238):1–27.
- Bartels, C. (1999). The intonation of English statements and questions: a compositional interpretation. Routledge.
- Biezma, M., & Rawlins, K. (2012). Responding to alternative and polar questions. Linguistics and Philosophy, 35(5):361–406.
- Cohen, P. R. & H. J. Levesque (1990). Intention Is Choice with Commitment. In: Artificial Intelligence 42:213–261.
- Destruel, E., Velleman, D., Onea, E., Bumford, D., Xue, J., & Beaver, D. (2015). A cross-linguistic study of the non-at-issueness of exhaustive inferences. In F. Schwarz (Ed.), *Experimental perspectives on presuppositions* (pp. 135–156). Springer International Publishing.
- Groenendijk, J., & Roelofsen, F. (2009). Inquisitive semantics and pragmatics. In J. M. Larrazabal & L. Zubeldia (Eds.), Meaning, content, and argument [...].
- Horn, L. R. (1989). A natural history of negation. Chicago: University of Chicago Press.
- Roelofsen, F., & Farkas, D. F. (2015). Polarity particle responses as a window onto the interpretation of questions and assertions. Language, 91(2):359–414.
- Westera, M. (2017). Exhaustivity and intonation: a unified theory. PhD dissertation, University of Amsterdam.