Sentence Final Particles and Intonation in Japanese

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Model of Discourse Context

Following [Groenendijk(1999)] I model the discourse context as a **set of world-world pairs**. I extend the model to handle imperatives.

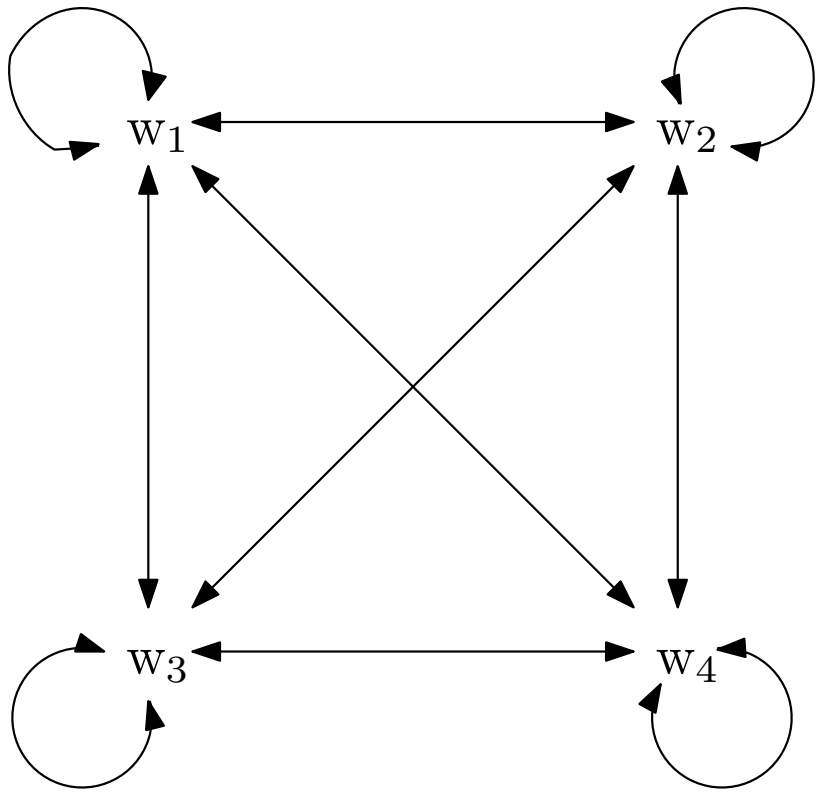
- Assertions serve to eliminate worlds from the context, thereby encoding data about how the world is.
- Interrogatives serve to disconnect worlds in the context, creating an equivalence relation over worlds and thereby raising an issue.
- Imperatives serve to create asymmetries between worlds, thereby expressing intentions or preferences as to how the world should be.

Types of Context Update

Null Context

Logical Space

	p	q
w_1	1	1
w_2	1	0
w_3	0	1
w_4	0	0



Types of Context Update

ASSERT(p): ~~w_3, w_4~~

Logical Space

	p	q
w_1	1	1
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w_3	0	1
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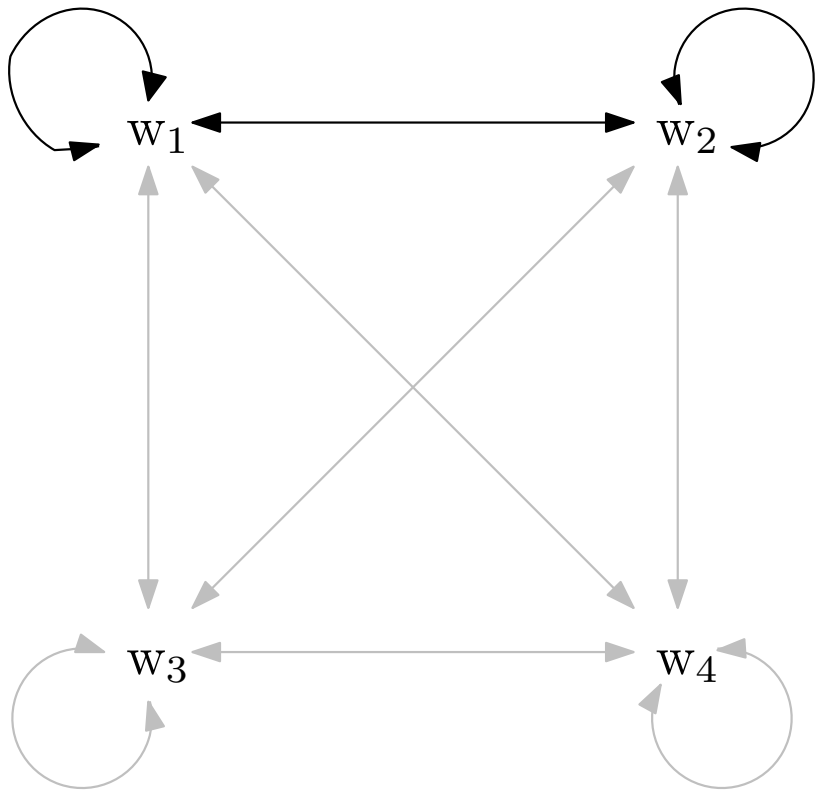
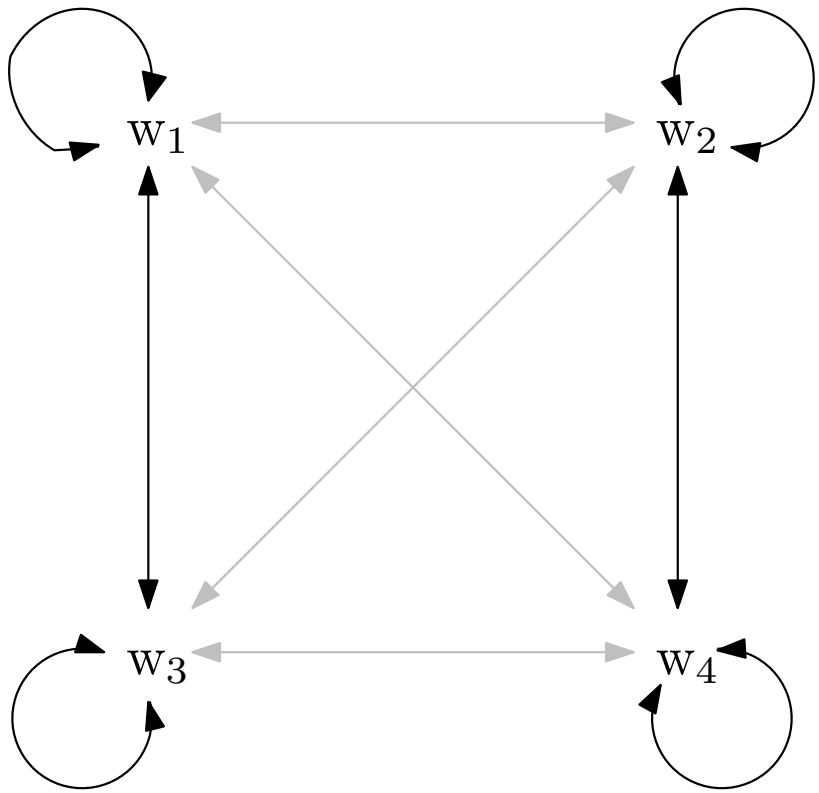


Types of Context Update

INTERROGATE($\{q, \neg q\}$): $\{\{w_1, w_3\}, \{w_2, w_4\}\}$

Logical Space

	p	q
w_1	1	1
w_2	1	0
w_3	0	1
w_4	0	0



Types of Context Update

IMPERATIVE(q): $\{w_1, w_3\} > \{w_2, w_4\}$

Logical Space

	p	q
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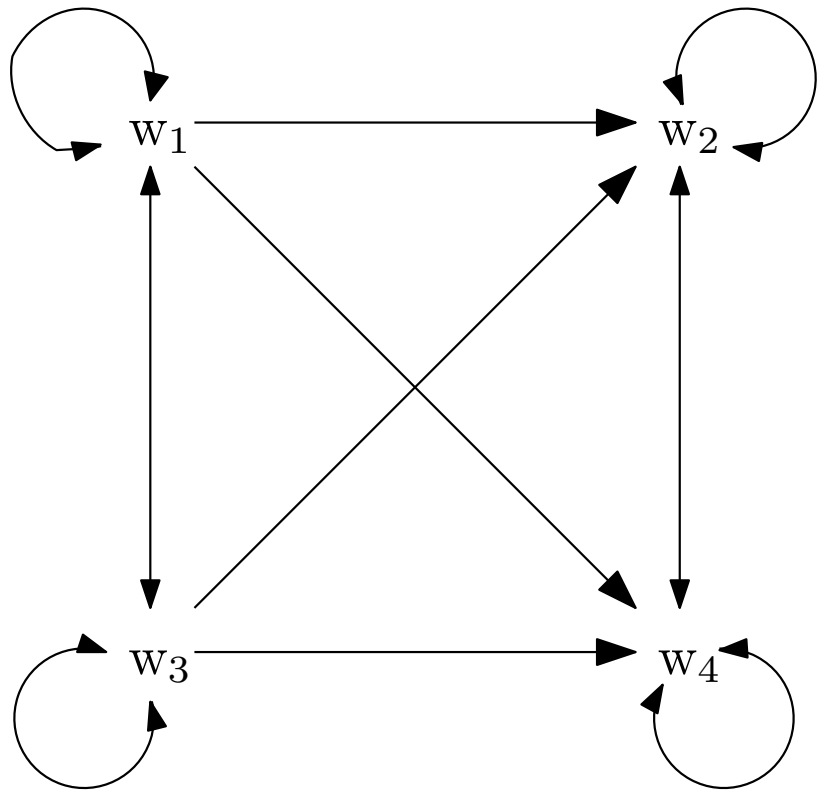

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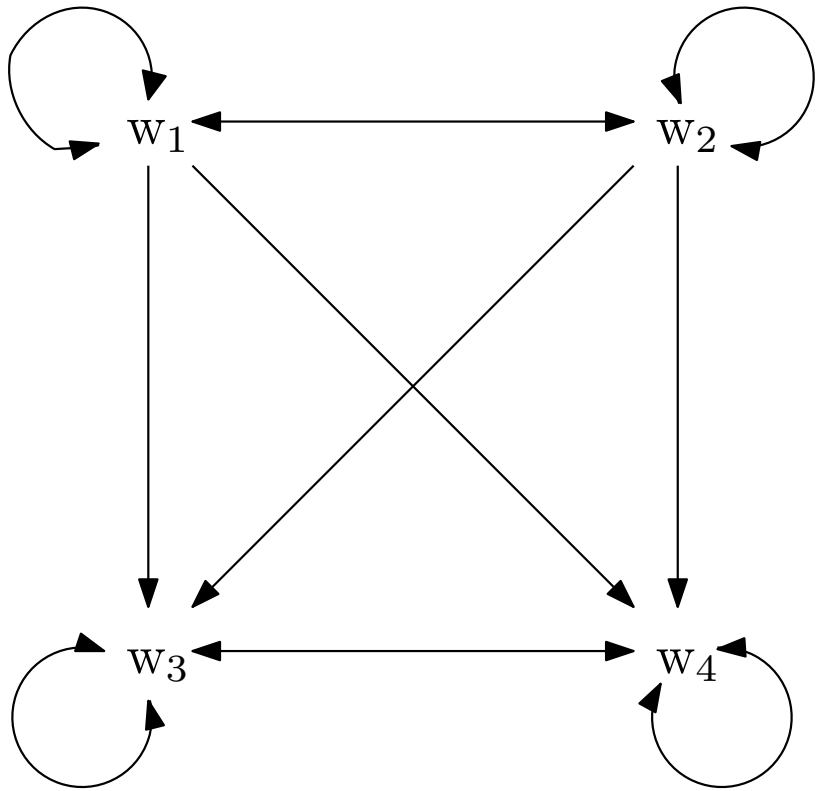

Logical Space

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Individualized Context Sets

I follow [Gunlogson(2003)] in splitting the discourse context into a set of commitments for each discourse participant.

- For a discourse context C with two participants A and B,
  - $\mathrm{C}(A) =$ the set of discourse commitments of A.
  - $\mathrm{C}(B) =$ the set of discourse commitments of B.

A discourse participant's commitments are all encoded by a set of world-world pairs assigned to that participant.

Updating Discourse Commitments

Speaker-Directed Updates

Following [Davis(2009)], I propose that languages (in particular Japanese) contain elements that encode updates the speaker's discourse commitments. Call these elements speaker-oriented force heads.

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Speaker-oriented ASSERTION

$$[[\text{ASSERT}_{\text{spkr}}]] = \lambda p \lambda \text{C}.\text{C}(\text{spkr}) \oplus [[p]]$$

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$$\text{cs} \oplus \varphi = \{\langle w, v\rangle \in \text{cs} \mid \varphi(w) = \varphi(v) = 1\}$$

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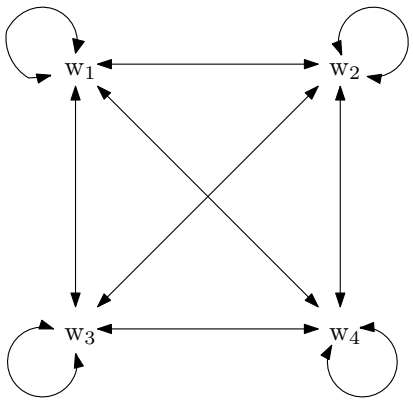
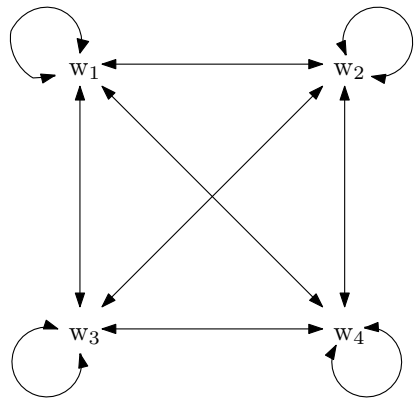
Speaker-Oriented Assertive Update

A's pre-update cs, $\mathrm{C}(A)$



B's pre-update cs, $\mathrm{C}(B)$



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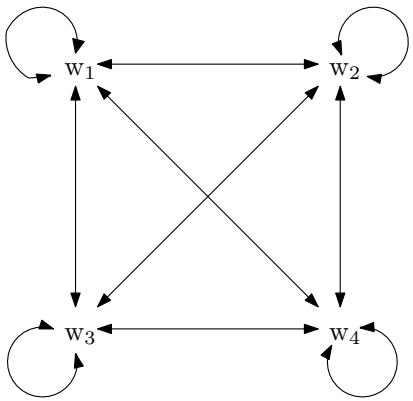

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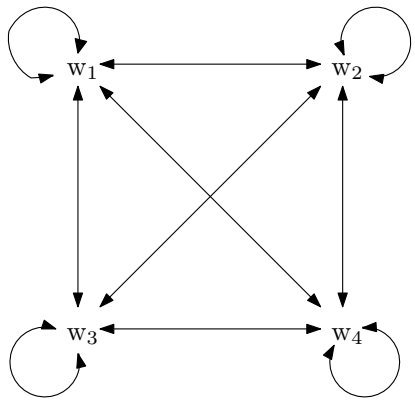
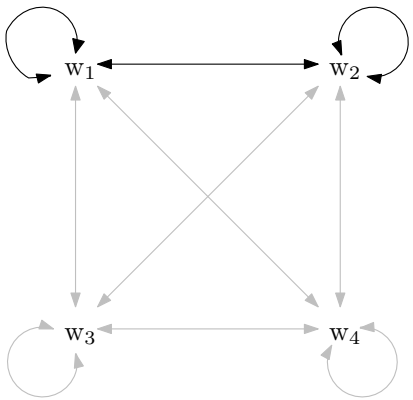


A makes an Assertion

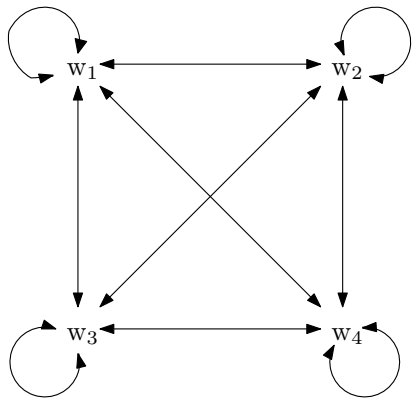
A: $\textsc{assert}(\mathsf{p}) = \lambda \mathrm{C}.\mathrm{C}(\mathsf{A}) \oplus [[p]]$

Speaker-Oriented Assertive Update

A's post-update cs, $\mathrm{C}'(A)$



B's post-update cs, $\mathrm{C}'(B)$



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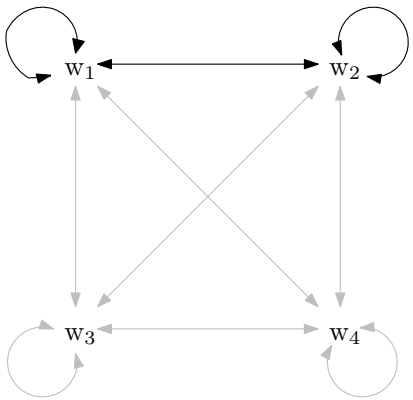
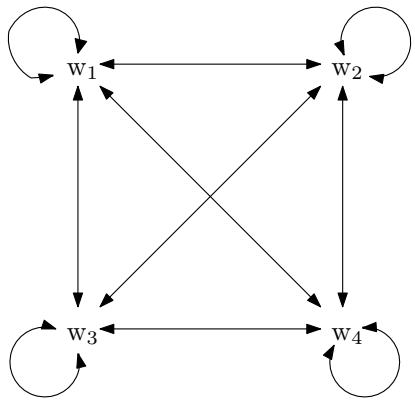


B's post-update cs, $\mathrm{C}'(B)$



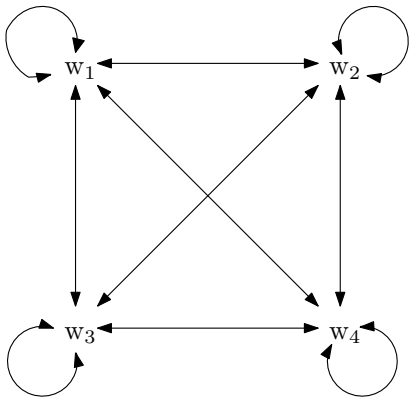
A makes an Assertion

A: $\textsc{assert}(\mathsf{p}) = \lambda \mathrm{C}.\mathrm{C}(\mathsf{A}) \oplus [[p]]$

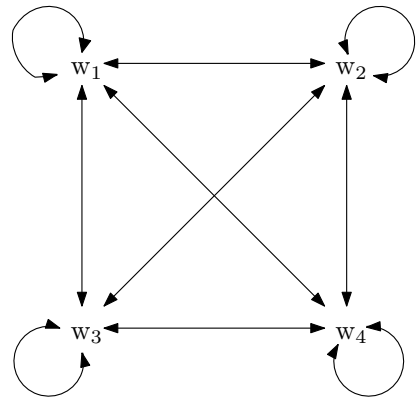
- The addressee's commitments are not directly affected by the assertion.
- Pragmatically, however, the speaker-oriented assertion can be interpreted as an indirect request for the addressee to update their own commitments.

Speaker-Oriented Imperative Update

A's pre-update cs, $\mathrm{C}(A)$



B's pre-update cs, $\mathrm{C}(B)$



Speaker-Oriented Imperative Update

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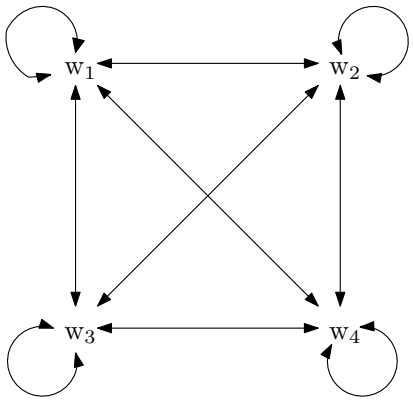

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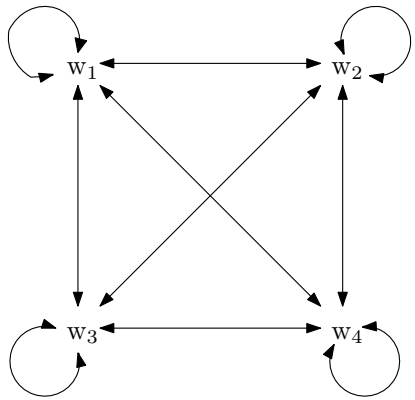
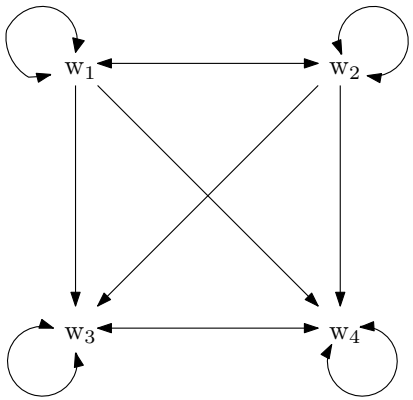


A utters an Imperative

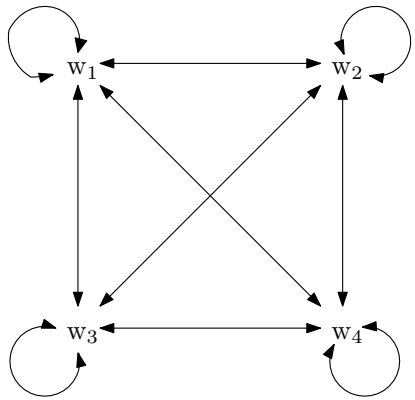
A: IMP(p)

Speaker-Oriented Imperative Update

A's post-update cs $\mathrm{C}'(A)$



B's post-update cs, $\mathrm{C}'(B)$



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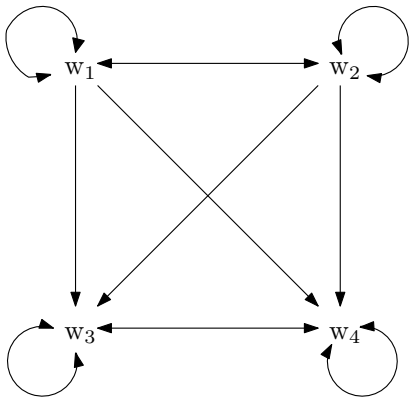

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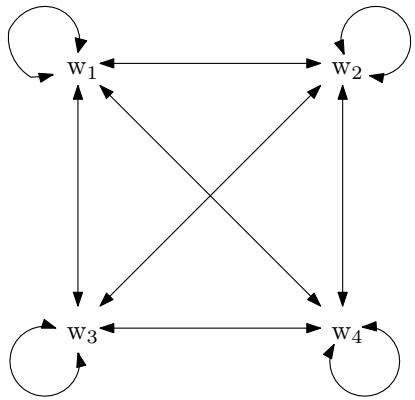


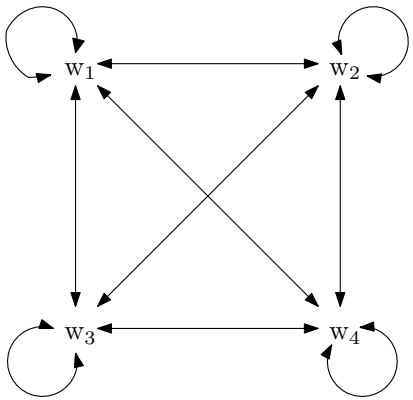
A utters an Imperative

A: IMP(p)

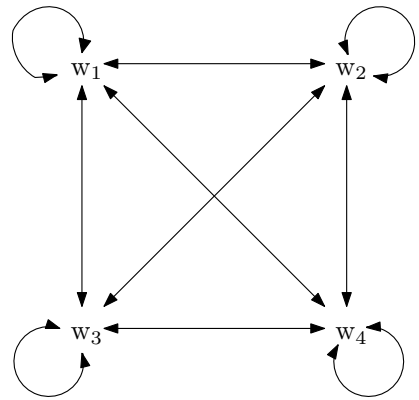
Again, the speaker-oriented imperative does not encode a change to the addressee's commitments, but pragmatically can be understood as a request that such a change be made.

Speaker-Oriented Interrogative Update

A's pre-update cs, $\mathrm{C}(A)$

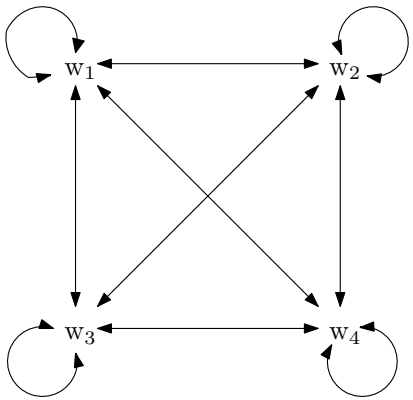


B's pre-update cs, $\mathrm{C}(B)$

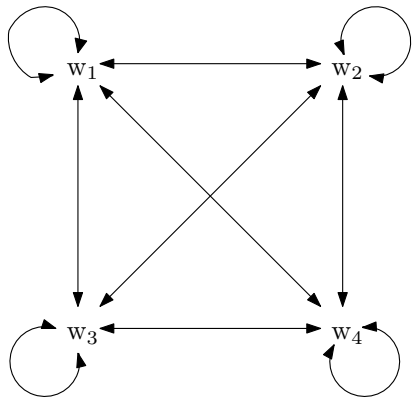


Speaker-Oriented Interrogative Update

A's pre-update cs, $\mathrm{C}(A)$



B's pre-update cs, $\mathrm{C}(B)$

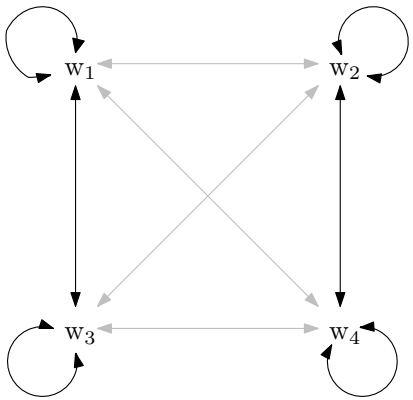


A asks a (self-directed) Interrogative

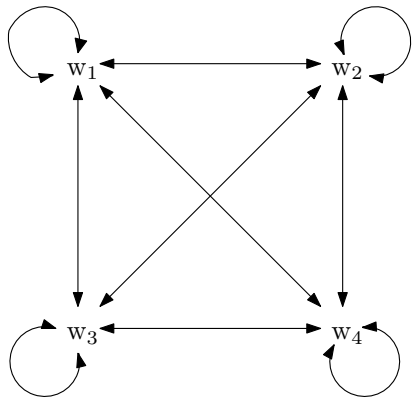
A: INTER(q)

Speaker-Oriented Interrogative Update

A's post-update cs, $\mathrm{C}'(A)$



B's post-update cs, $\mathrm{C}'(B)$

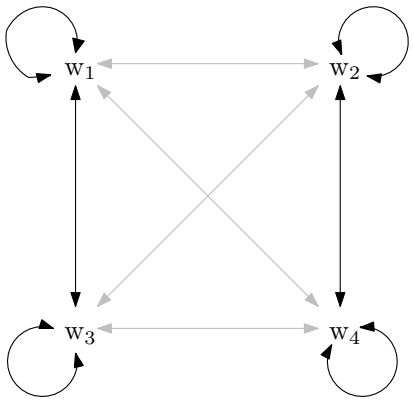


A asks a (self-directed) Interrogative

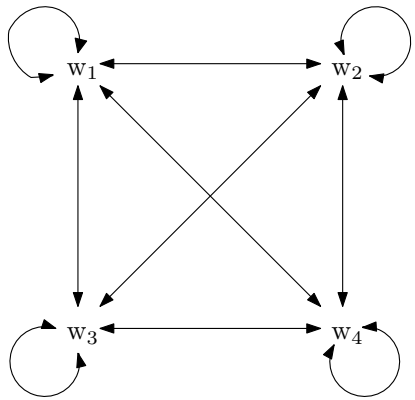
A: INTER(q)

Speaker-Oriented Interrogative Update

A's post-update cs, $c'(A)$



B's post-update cs, $c'(B)$



A asks a (self-directed) Interrogative

A: INTER(q)

Here too it is only the speaker's commitments that are affected, but pragmatically such a move will often be interpreted as a request to the addressee to resolve the speaker's issue.

Declarative + Falling Intonation

- Claim: Plain declaratives ending in falling intonation act as speaker-oriented assertions.
- Evidence: Such declaratives can be used in `self-addressing' situations.

Declarative + Falling Intonation

Context: The speaker is waiting for the bus, and sees it coming. She says the following, to no one in particular.

あっ、バス来た⇓。

Analysis

The above discourse context contains only a speaker, and no addressee. The speaker-oriented update is fine, since it does not refer to an addressee.

Declarative + Falling Intonation

Context: The speaker is checking a list of people who have paid for their bento, and confirming to himself who has paid.

クリスは払った⇓。

Analysis

Here too, the discourse context contains only the speaker, who updates his own discourse commitments as he proceeds.

Imperative Morphology

Imperatives are speaker-oriented

While many researchers (e.g. [Han(1999)]) give imperatives a dynamic semantics updating the addressee's commitments, [Davis(2009)] provides evidence that imperatives (at least in Japanese) encode updates to the speaker's own commitments.

Evidence

Imperatives can be used to grant permission to an addressee who has already expressed a desire to do the action encoded by the imperative. If imperatives were addressee-oriented, they should be redundant in this context (see [Davis(2009)] and [Han(1999)] for further discussion).

Context: B has knocked on A's door. A says the following.

入れ。 (or 入って。)

Analysis

- In this `permission-granting' imperative, the imperative serves to indicate that it is in accordance with the speaker's wishes/intentions/etc that the addressee come in.
- The addressee has already indicated, by knocking, his plan to enter the room, and so an update to his intentions would be redundant.
- A speaker-oriented update, on the other hand, is non-redundant, and applies easily.

Speaker-Oriented Imperative Update

$$\text{enter(B)}(w_1) = \text{enter(B)}(w_2) = 1$$
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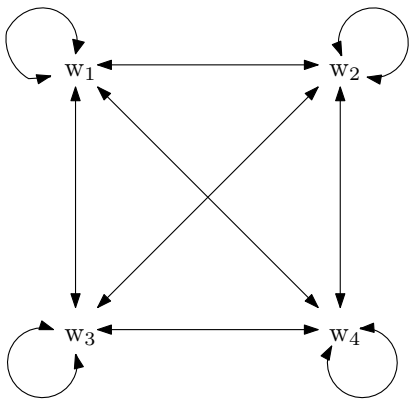
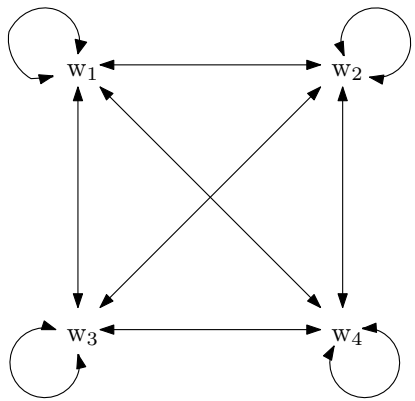
A's pre-update cs, $\mathrm{C}(A)$



B's pre-update cs, $\mathrm{C}(B)$



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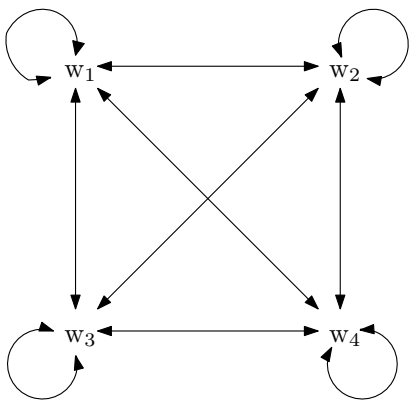
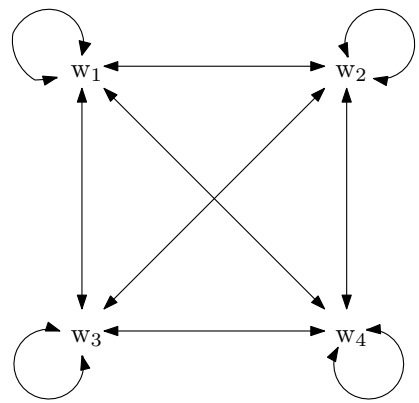


B's pre-update cs, $\mathrm{C}(B)$



B knocks on A's door.

Reflected by update to A's commitments.

Speaker-Oriented Imperative Update

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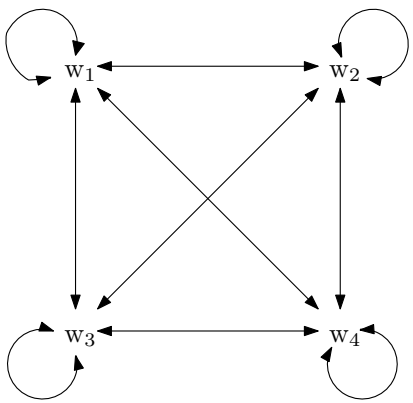

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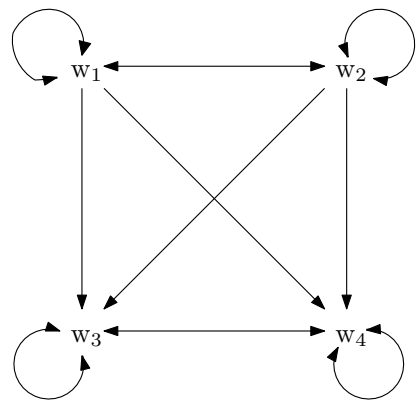

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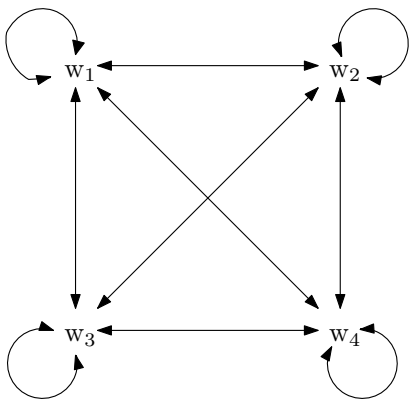

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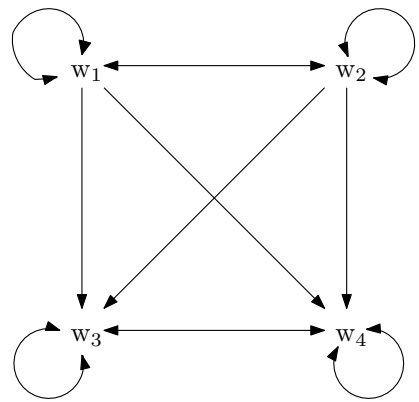

A says 入れ.

A: $\mathrm{IMP}_{\mathsf{spkr}}(\mathsf{enter(B)})$

Speaker-Oriented Imperative Update

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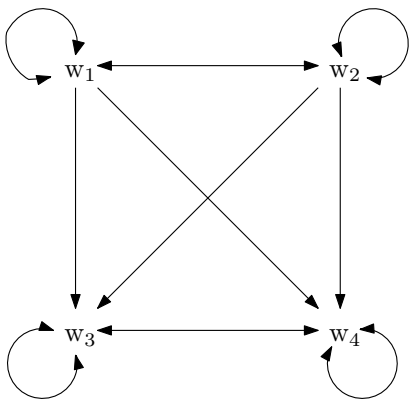
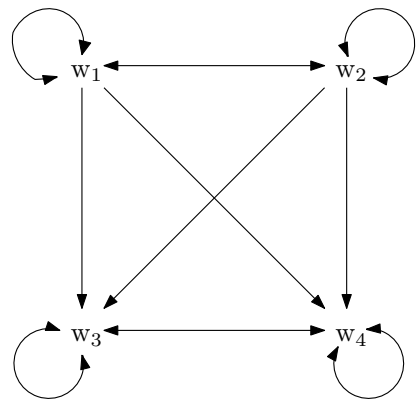
$\mathsf{enter(B)}(\mathsf{w}_3) = \mathsf{enter(B)}(\mathsf{w}_4) = 0$

A's post-update cs $\mathrm{C}''(A)$



B's post-update cs, $\mathrm{C}''(B)$



A says 入れ.

A: $\mathrm{IMP}_{\mathsf{spkr}}(\mathsf{enter(B)})$

Wh-Question + んだ

- Claim: Questions ending with the particle(?) *nda* encode speaker-oriented interrogative updates.
- Evidence: These questions (in contrast to those containing a question particle with rising intonation) can be used to express self-addressed questions.

Speaker-Oriented Interrogatives

Context: A detective is pondering who might be responsible for the recent series of dog killings.

一体誰があの可愛い犬を殺したんだ。
(cf. 一体誰があの可愛い犬を殺しましたか⇂?)

Analysis

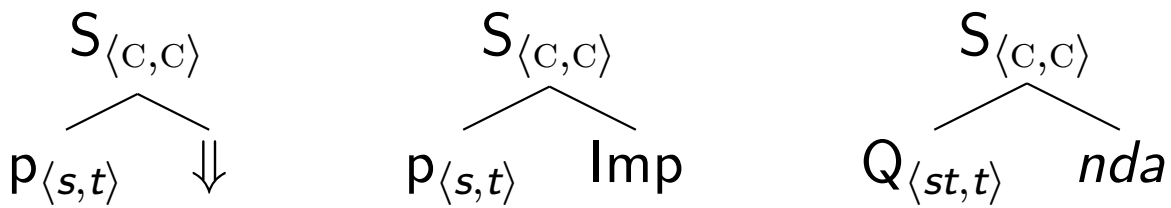
The question with んだ is possible even in situations where the detective is posing the question to no-one but himself. On the other hand, the minimally contrasting sentence containing the question particle *ka* and rising intonation is felt to be very unnatural in such situations, since it expresses an addressee-directed interrrogative update.

Speaker-Oriented Force Heads in Japanese

Based on the above evidence, I propose the following three speaker-oriented force heads in Japanese:

- $\Downarrow = \text{ASSERT}_{\text{spkr}}$
- Imperative Morphology $= \text{IMP}_{\text{spkr}}$
- *nda* $= \text{INTER}_{\text{spkr}}$

The structure of sentences ending in one of these heads:



The Function of *yo*

Claim

Modifying the analysis of [Davis(2009)], I argue that the SFP *yo* is used to add an addressee-oriented update semantics to a speaker-oriented force head.

Evidence

When *yo* is added to a sentence formed from one of the speaker-oriented force heads introduced earlier, the resulting sentence always requires an addressee.

Assertions with *yo*

Context: The speaker is waiting for the bus, and sees it coming. She says the following, to no one in particular.

あっ、バス来た⇓(＃よ)。

Context: The addressee is waiting for the bus. The speaker sees it coming, and says the following.

バス来たよ。

Assertions with *yo*

Context: The speaker is checking a list of people who have paid for their bento, and confirming to himself who has paid.

クリスは払った⇓。（＃よ）

Context: The addressee is curious about who has paid. The speaker, checking the list of people who have paid, says the following.

クリスは払ったよ。

Imperatives with *yo*

- If an imperative ends with *yo*, it is interpreted as an instruction to the addressee as to what he should do.
- Thus, the `permission-granting' use of the imperative is impossible with *yo*.

Context: B has knocked on A's door. A says the following.

入れ(＃よ)。 (or 入って(＃よ)。)

Questions with *yo*

- When questions ending in *nda* are followed by *yo*, they must be interpreted as addressee-directed.
- *yo*-marked interrogatives are infelicitous in contexts without an addressee.

Context: A detective is pondering who might be responsible for the recent series of dog killings.

一体誰があの可愛い犬を殺したんだ（#よ）。

Context: A detective has apprehended a person who he believes knows who the dog-killer is.

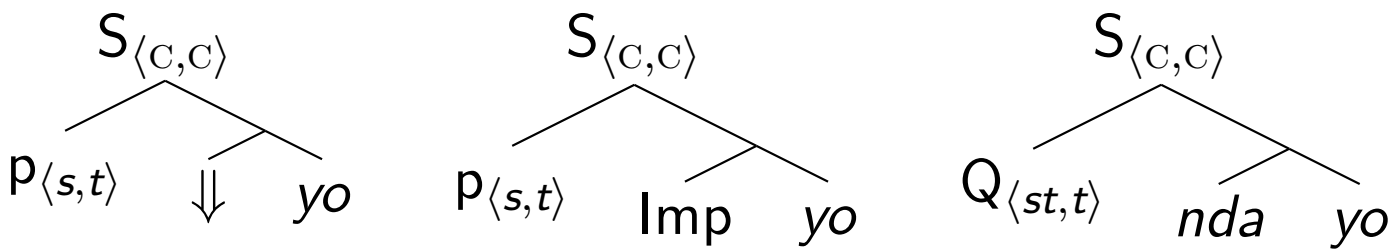
一体誰があの可愛い犬を殺したんだ（よ）。

The Denotation of *yo*

Based on the previous observations, I propose the following denotation for *yo*:

$$[[yo]] = \begin{cases} \lambda F \lambda p \lambda \mathrm{C}.\ F(p)\Big(\mathrm{C}(\mathsf{addr}) \oplus p\Big) & \text{if } F = \textsc{assert}_{\mathsf{spkr}} \\ \lambda F \lambda p \lambda \mathrm{C}.\ F(p)\Big(\mathrm{C}(\mathsf{addr}) \circledcirc p\Big) & \text{if } F = \textsc{imp}_{\mathsf{spkr}} \\ \lambda F \lambda Q \lambda \mathrm{C}.\ F(Q)\Big(\mathrm{C}(\mathsf{addr}) \oslash Q\Big) & \text{if } F = \textsc{inter}_{\mathsf{spkr}} \end{cases}$$

yo combines with speaker-directed force heads



Sentence Final Intonation with *yo*

Assertive and imperative sentences ending with *yo* can have one of two sentence-final intonational contours, rising or falling:

Assertion

バス来たよ(↑/↓)

Imperative

はやく食べろよ(↑/↓)

But interrogatives with *yo* can only end with falling intonation:

Interrogative

一体誰がその可愛い犬を殺したんだよ↓(*↑)

Why?

Presuppositions About Context Updates

Pragmatic Presupposition of $\uparrow$: Optimal Action

Modifying the proposal of [Davis(2009)], I suggest that the use of $\uparrow$ introduces a pragmatic presupposition that there is some relevant action in the post-update context that is optimal for the addressee that was not optimal in the pre-update context.

Actions

The analysis relies on a set of relevant actions being considered by the addressee.

Optimality

The analysis also relies on a notion of optimality over choices of different actions. This is cashed out in terms of the asymmetries in the relation on worlds introduced by imperatives.

The Presupposition of ↑, Informally

In the interest of time and sanity, I only give an informal sketch of how the distribution of ↑ is accounted for.

- The use of ↑ with a sentence indicates that there is a salient action (choice) for the addressee that is optimal in the post-update context, which was not optimal in the pre-update context.

Assertions

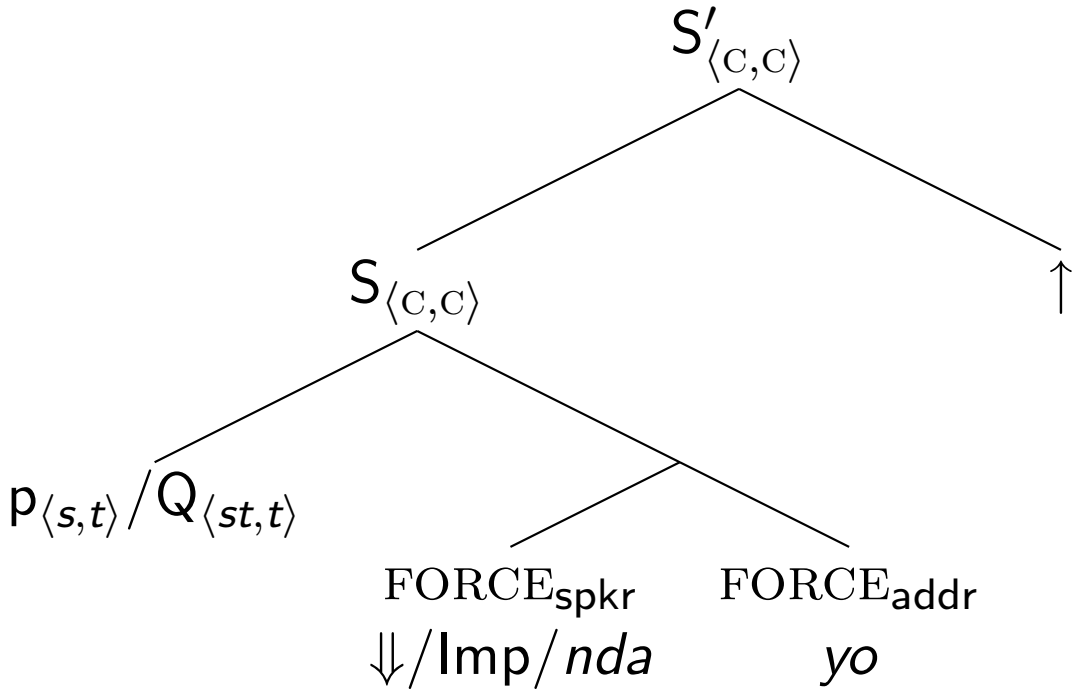
Assertions with *yo* have a CCP that eliminates worlds from the addressee's post-update commitment set. Thus, there is the possibility of satisfying *yo*'s presupposition on the basis of new data.

Imperatives

Imperatives with *yo* have a CCP that ranks worlds in the addressee's post-update commitment set. Thus, there is the possibility of satisfying *yo*'s presupposition on the basis of new preferences over worlds.

The Big Picture

The various pieces introduced in this talk fit together to form structures with the following form:



- The elements examined in this talk all play a role in building up the CCP of a sentence, and thus contribute to specifying its potential roles in discourse.

THANKS!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