Distributivity and collectivity in the world domain

Evidence from Japanese modality

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Conditionals in formal semantics

Conditionals as a widely studied phenomenon in formal semantics

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- Today: In search of more empirical arguments for the referential theory...

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Challenge: Without an '*each*'-like distributor, is it even possible to test the distributivity/collectivity of conditionals?

The referential theory in a nutshell

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'**if**' picks out worlds that rank highest on a similarity scale. (Stalnaker 1968)

(3) **If I strike this match**, it will light.

- select the worlds that are maximally similar with the actual world, e.g. worlds where there is oxygen, the match isn't soaked in water

A distributive analysis of conditionals

Schlenker's conditionals (distributive)

(4) Once defined,
$[\![\textbf{if p, q}]\!]^w = 1$ iff for all $v \sqsubset [\![\textbf{if p}]\!]^w$, $[\![\textbf{q}]\!]^v = 1$.

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Can it? How to test?

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Schema of Japanese prioritizing modals (Akatsuka 1992)

[[**p**-COND] **Good**/**Bad**]

COND: *-tara*, *-reba*, *-to* etc.
Good: *ii* 'good', *ureshii* 'glad' etc.
Bad: *naranai* 'doesn't come about', *ikenai* 'can't go' etc.

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- I assume the meanings of Japanese prioritizing modals build on the meanings of the **if**-clause and **Good**/**Bad** (Ask me during Q&A!)

See Kaufmann (2017) for evidence

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Ingredients

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(7) *tabe-reba i-i.* $\rightsquigarrow [\![\textbf{Good}]\!]^w([\![\textbf{you eat}]\!]^w)$

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- **Good** and **Bad** are collective predicates applying to world-pluralities
  - *Best*(w): set of worlds that are maximally ideal in terms of the relevant rules/desires/goals at w.

(8) $[\![\textbf{Good}_{coll}]\!]^w = \lambda P_s.[\{v : v \sqsubset P\} \subseteq \mathit{Best}(w)]$

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Kaufmann's Japanese prioritizing modals (collective)

$[\![\textbf{if p, Good/Bad}_{coll}]\!]^w = 1$ iff $[\![\textbf{Good/Bad}_{coll}]\!]^w([\![\textbf{if p}]\!]^w) = 1$

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- But could Japanese modals also be distributive ('be tired'-type)?

Could Japanese prioritizing modals be distributive?

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- Finally, apply $\textbf{Good}_{dist}$ to Schlenker's distributive conditionals.

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This can be done with **if**-clauses that change rules/desires/goals.

cf. Frank (1996), von Fintel and Iatridou (2005), Condoravdi and Lauer (2016) a.o.

Data:
if-clauses signal changes in goals

The university application example

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The teacher also knows the facts that

1. Kyoto University and the University of Tokyo have the country's best mathematics departments;
2. Kyoto is close enough for Hanako to commute, but Tokyo is too far;
3. one can't apply for both schools.

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(12) *Kyoudai-ni shigan shi-te sore-ni muke-te benkyou su-reba ii.*
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lit. 'If you apply for KyotoU and study for it, it's good.'
≈ 'You should apply for KyotoU and study for it. '

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≈ 'You should apply for KyotoU and study for it. '

(13) *Toudai-ni* *shigan shi-te* *sore-ni* *muke-te* *benkyou su-reba* *ii.*
Tokyo.U-DAT apply do-CONT that-DAT turn-CONT study do-COND good

lit. 'If you apply for the UTokyo and study for it, it's good.' **(False)**
≈ 'You should apply for the UTokyo and study for it. '

Upshot: The collective and distributive analyses come apart for (13).

‘Apply for UTokyo and study for it, Good’ + collective

Kaufmann’s Japanese prioritizing modals (collective)

$[\![\textbf{if p, Good}_{coll}]\!]^w = 1 \quad \text{iff } \{v : v \sqsubset P\} \subseteq \mathit{Best}(w)$

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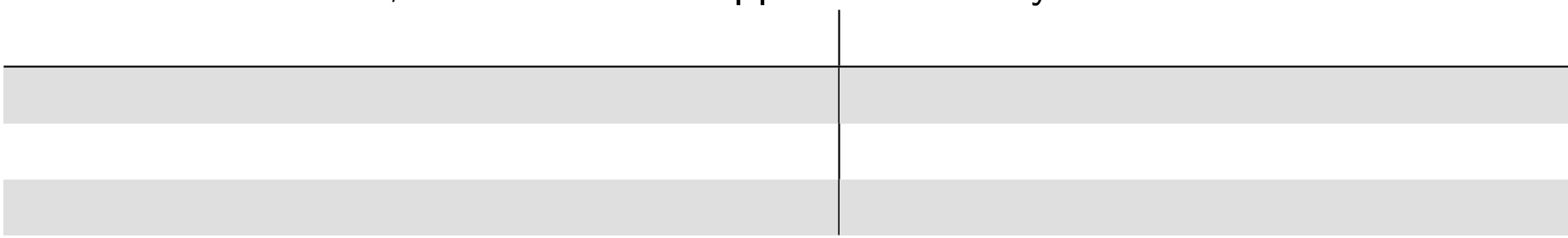

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Facts at w	**Goals at** w

‘Apply for UTokyo and study for it, Good’ + collective

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at w	**Goals at w**
Kyoto close, Tokyo far	

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at w	**Goals at w**
Kyoto close, Tokyo far	
good math departments in KU and UT	

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at w	**Goals at w**
Kyoto close, Tokyo far	
good math departments in KU and UT	
can’t apply for both schools	

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at w	**Goals at w**
Kyoto close, Tokyo far	get in good math department
good math departments in KU and UT	commute from home
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Facts at w	**Goals at w**	
Kyoto close, Tokyo far	get in good math department	✓
good math departments in KU and UT	commute from home	
can't apply for both schools		

At each v, Hanako applies for and studies for UTokyo

✓ get in a good math department at v

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at w	**Goals at w**	
Kyoto close, Tokyo far	get in good math department	✓
good math departments in KU and UT	commute from home	×
can't apply for both schools		

At each v, Hanako applies for and studies for UTokyo

- ✓ get in a good math department at v
- × commute from home at v

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Kyoto close, Tokyo far	get in good math department	✓
good math departments in KU and UT	commute from home	×
can’t apply for both schools		

At each v, Hanako applies for and studies for UTokyo

- ✓ get in a good math department at v
- × commute from home at v

Prediction: False, correct prediction

'Apply for UTokyo and study for it, Good' + collective

Kaufmann's Japanese prioritizing modals (collective)

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Japanese prioritizing modals have the collective construal

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Facts at w	**Goals at w**	
Kyoto close, Tokyo far	get in good math department	✓
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can't apply for both schools		

At each v, Hanako applies for and studies for UTokyo

- ✓ get in a good math department at v
- × commute from home at v

Prediction: False, correct prediction

‘Apply for UTokyo and study for it, Good’ + distributive

My Japanese prioritizing modals (distributive, working hypothesis)

$[\![\textbf{if p, Good}_{dist}]\!]^w = 1$ iff for all $v \sqsubset [\![\textbf{if p}]\!]^w, v \in \mathit{Best}(v)$

Consistency: The goals of rational agents must be mutually consistent and consistent with the relevant facts.

w: the actual world; v: Hanako applies for UTokyo and studies for it

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at v	Goals at v

‘Apply for UTokyo and study for it, Good’ + distributive

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Consistency: The goals of rational agents must be mutually consistent and consistent with the relevant facts.

w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at v	**Goals at v**
Kyoto close, Tokyo far	

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at v	Goals at v
Kyoto close, Tokyo far	
good math departments in KU and UT	

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at v	Goals at v
Kyoto close, Tokyo far	
good math departments in KU and UT	
can’t apply for both schools	

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Facts at v	**Goals at v**
Kyoto close, Tokyo far	
good math departments in KU and UT	
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apply and study for UTokyo	

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Facts at v	**Goals at v**
Kyoto close, Tokyo far	get in good math department
good math departments in KU and UT	
can’t apply for both schools	
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Kyoto close, Tokyo far	get in good math department
good math departments in KU and UT	
can’t apply for both schools	get in UTokyo
apply and study for UTokyo	

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at v	**Goals at v**
Kyoto close, Tokyo far	get in good math department
good math departments in KU and UT	~~commute from home~~ (conflict)
can’t apply for both schools	get in UTokyo
apply and study for UTokyo	

‘Apply for UTokyo and study for it, Good’ + distributive

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at v	**Goals at v**
Kyoto close, Tokyo far	get in good math department
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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at v	**Goals at v**
Kyoto close, Tokyo far	get in good math department
good math departments in KU and UT	~~commute from home~~ (conflict)
can’t apply for both schools	get in UTokyo
apply and study for UTokyo	

At each v, Hanako applies for and studies for UTokyo

‘Apply for UTokyo and study for it, Good’ + distributive

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Consistency: The goals of rational agents must be mutually consistent and consistent with the relevant facts.

w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at v	**Goals at v**	
Kyoto close, Tokyo far	get in good math department	✓
good math departments in KU and UT	~~commute from home~~ (conflict)	
can’t apply for both schools	get in UTokyo	
apply and study for UTokyo		

At each v, Hanako applies for and studies for UTokyo

✓ get in a good math department at v

‘Apply for UTokyo and study for it, Good’ + distributive

My Japanese prioritizing modals (distributive, working hypothesis)

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w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at v	**Goals at v**	
Kyoto close, Tokyo far	get in good math department	✓
good math departments in KU and UT	~~commute from home~~ (conflict)	
can’t apply for both schools	get in UTokyo	✓
apply and study for UTokyo		

At each v, Hanako applies for and studies for UTokyo

- ✓ get in a good math department at v
- ✓ get in UTokyo at v

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Facts at v	Goals at v	
Kyoto close, Tokyo far	get in good math department	✓
good math departments in KU and UT	~~commute from home~~ (conflict)	
can’t apply for both schools	get in UTokyo	✓
apply and study for UTokyo		

At each v, Hanako applies for and studies for UTokyo

- ✓ get in a good math department at v
- ✓ get in UTokyo at v

Prediction: True, incorrect prediction

'Apply for UTokyo and study for it, Good' + distributive

My Japanese prioritizing modals (distributive, workin

$[\![\textbf{if p, Good}_{dist}]\!]^w = 1$ [illegible] $\sqsubseteq [\![\textbf{if p}]\!]^w, v \in \mathit{Best}(v)$

Japanese prioritizing modals cannot be distributive

Consistency: The goals of rational agents must be mutually consistent and consistent with the relevant facts.

w: the actual world; v: Hanako applies for UTokyo and studies for it

Facts at v	**Goals at v**	
Kyoto close, Tokyo far	get in good math department	✓
good math departments in KU and UT	~~commute from home~~ (conflict)	
can't apply for both schools	get in UTokyo	✓
apply and study for UTokyo		

At each v, Hanako applies for and studies for UTokyo

- ✓ get in a good math department at v
- ✓ get in UTokyo at v

Prediction: True, incorrect prediction

Summary

- We managed to tease apart the collective and the distributive analyses of conditionals.

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- We used Japanese prioritizing modals as our testing grounds.

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- Conclusion: Japanese prioritizing modals are inherently collective.

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Collective predication in the world and individual domains

(14) *tabe-reba i-i.*
eat-COND good-NPST
lit. 'If you eat, it's good.' ≈ 'You should eat.'

(15) The students gathered in the hall way.

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- Can we find conditionals that are inherently distributive ('be tired') or ambiguous ('carry a piano')?

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(14) *tabe-reba i-i.*
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lit. 'If you eat, it's good.' ≈ 'You should eat.'

(15) The students gathered in the hall way.

- Can we find conditionals that are inherently distributive ('be tired') or ambiguous ('carry a piano')? Keep looking for testing grounds from natural language...

Thank you!!

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