Introduction to dynamic semantics

Session 5: Reciprocals

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Outline

1 Recap

2 Relational vs operator-based approaches

3 Reciprocal strength

4 Reciprocal scope ambiguity

5 Multiple reciprocals

Anaphora in DRT

(1) Evelyn[1] marries Waymond[2]. She$_1^3$ owns a[4] laundromat.

u_1 u_2 u_3 u_4
Evelyn(u_1)
Waymond(u_2)
Marry(u_1, u_2)
$u_3 = u_1$
Laundromat(u_4)
Own(u_3, u_4)

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Why study reciprocals?

Studying reciprocals could help us decide between relational vs operator-based approaches.

Reciprocals: relational approach

(2) [Romeo and Juliet]^{1} like [each other]$^{2}_{1}$.

Reciprocals: relational approach

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u_1 u_2
$\mathrm{R} \oplus \mathrm{J}(\cup u_1)$
$\mathrm{Like}(u_1, u_2)$
$\cup u_2 = \cup u_1$
$u_2 \neq u_1$

	u_1	u_2
s_1	R	$\mathcal{J}$
s_2	$\mathcal{J}$	R

Reciprocals: operator-based approach

(3) Evelyn and Waymond ate a pizza.
Distributive reading: Evelyn and Waymond EACH ate a pizza.

Reciprocals: operator-based approach

(3) Evelyn and Waymond ate a pizza.
Distributive reading: Evelyn and Waymond EACH ate a pizza.

(4) Romeo and Juliet like each other.
Option 1: ≈ Romeo and Juliet EACH like the other. (Heim et al. 1991)
Option 2: ≈ RECIP(Romeo and Juliet, like) (Dalrymple et al. 1998)

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Reciprocal strength

(5) House of Commons etiquette requires legislators to address only the speaker of the House and refer to each other indirectly.

(6) “The captain!” said the pirates, staring at each other in surprise.
(Dalrymple et al. 1998)

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Reciprocal scope ambiguity

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	u_1	w	u_2	u_3
s_{1a}	R	w_1	R	$\mathcal{J}$
s_{1b}	R	w_1	$\mathcal{J}$	R
s_{2a}	$\mathcal{J}$	w_2	R	$\mathcal{J}$
s_{2b}	$\mathcal{J}$	w_2	$\mathcal{J}$	R

Reciprocal scope ambiguity

(7) Romeo and Juliet think that they like each other.

Narrow scope: Romeo and Juliet think: "We like each other."

	u_1	w	u_2	u_3
s_{1a}	R	w_1	R	$\mathcal{J}$
s_{1b}	R	w_1	$\mathcal{J}$	R
s_{2a}	$\mathcal{J}$	w_2	R	$\mathcal{J}$
s_{2b}	$\mathcal{J}$	w_2	$\mathcal{J}$	R

LF: Romeo and Juliet think that they EACH like the other.

Reciprocal scope ambiguity

(8) Romeo and Juliet think that they like each other.

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	u_1	w	u_2	u_3
s_1	R	w_1	R	$\mathcal{J}$
s_2	$\mathcal{J}$	w_2	$\mathcal{J}$	R

Reciprocal scope ambiguity

(8) Romeo and Juliet think that they like each other.

Wide scope: Romeo thinks: "I like Juliet" and Juliet thinks: "I like Romeo."

	u_1	w	u_2	u_3
s_1	R	w_1	R	$\mathcal{J}$
s_2	$\mathcal{J}$	w_2	$\mathcal{J}$	R

LF: Romeo and Juliet EACH think that they like the other.

Reciprocal scope ambiguity

(8) Romeo and Juliet think that they like each other.

Wide scope: Romeo thinks: "I like Juliet" and Juliet thinks: "I like Romeo."

	u_1	w	u_2	u_3
s_1	R	w_1	R	$\mathcal{J}$
s_2	$\mathcal{J}$	w_2	$\mathcal{J}$	R

LF: Romeo and Juliet EACH think that they like the other.

How might we account for this ambiguity in DRT?

Recap: plural anaphora in DRT

(9) Evelyn and Waymond thought they had won.

Recap: plural anaphora in DRT

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This sentence is ambiguous.

Recap: plural anaphora in DRT

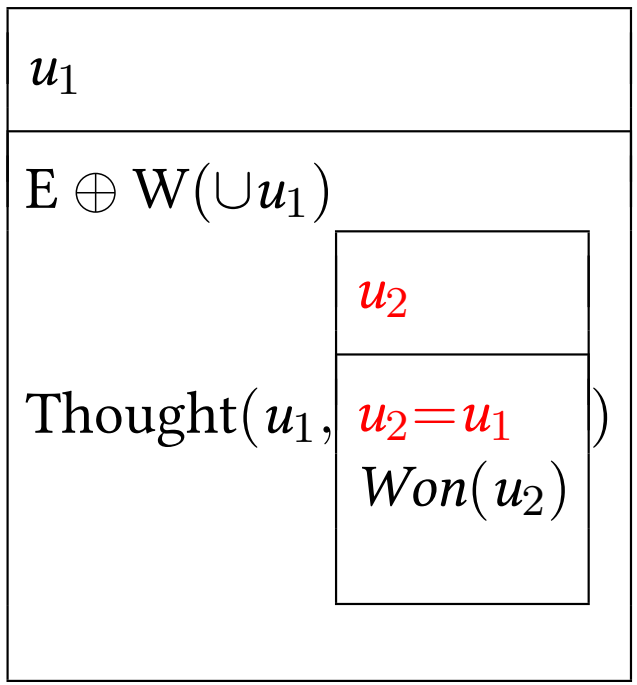
(9) Evelyn and Waymond thought they had won.

This sentence is ambiguous.

1. Evelyn and Waymond each thought: “We won.”
2. Evelyn and Waymond each thought: “I won.”

Recap: plural anaphora in DRT

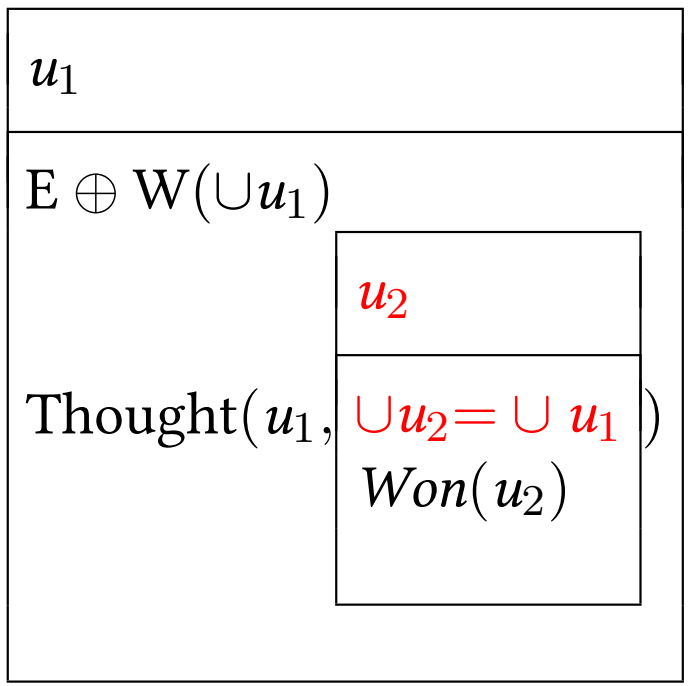
(10) [Evelyn and Waymond]^{1} thought they$^{2}_{1}$ had won.
Bound reading: Evelyn and Waymond each thought: "I won."



	u_1	u_2
s_1	E	E
s_2	W	W

Recap: plural anaphora in DRT

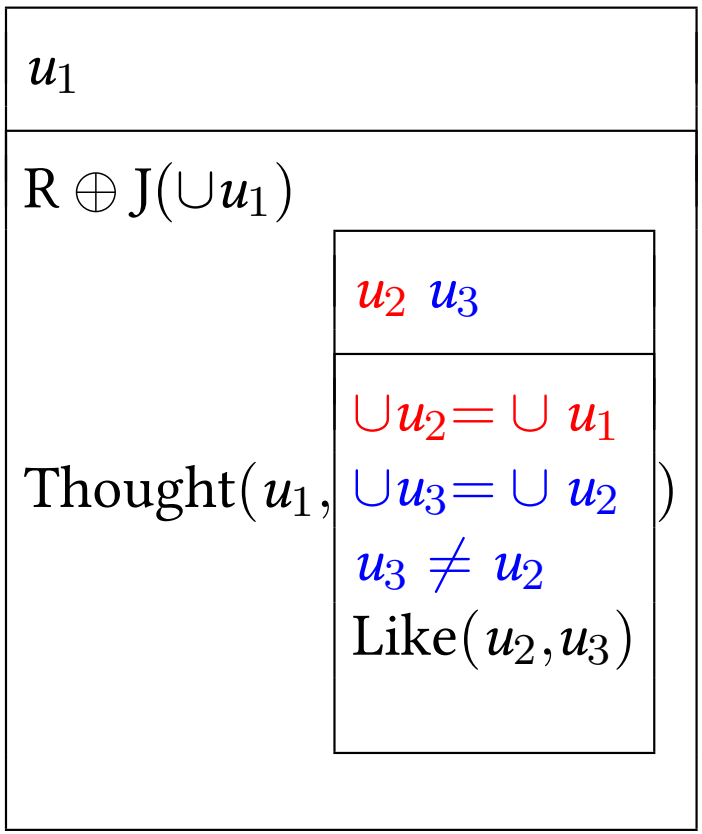
(11) [Evelyn and Waymond]^{1} thought they$^{2}_{1}$ had won.
Group identity reading: Evelyn and Waymond each thought: "We won."



	u_1	u_2
s_1	E	$E \oplus W$
s_2	W	$E \oplus W$

Reciprocal scope ambiguity

(12) [Romeo and Juliet]^1 think that they^2 like [each other]^3.
Narrow scope: Romeo and Juliet think: "We like each other."

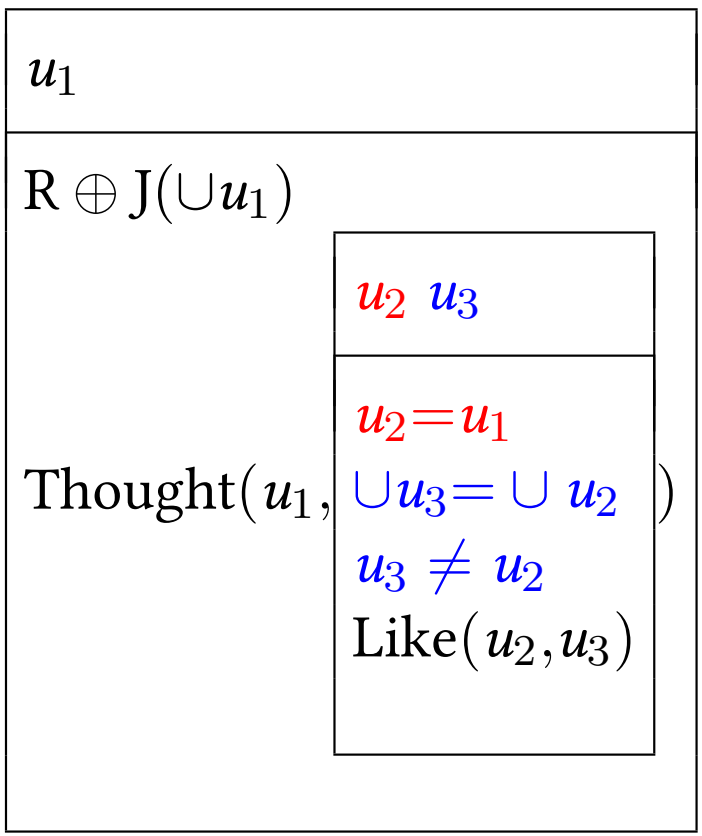


	u_1	w	u_2	u_3
s_{1a}	R	w_1	R	$\mathcal{J}$
s_{1b}	R	w_1	$\mathcal{J}$	R
s_{2a}	$\mathcal{J}$	w_2	R	$\mathcal{J}$
s_{2b}	$\mathcal{J}$	w_2	$\mathcal{J}$	R

Reciprocal scope ambiguity

(13) [Romeo and Juliet]^1 think that they^2 like [each other]^3.

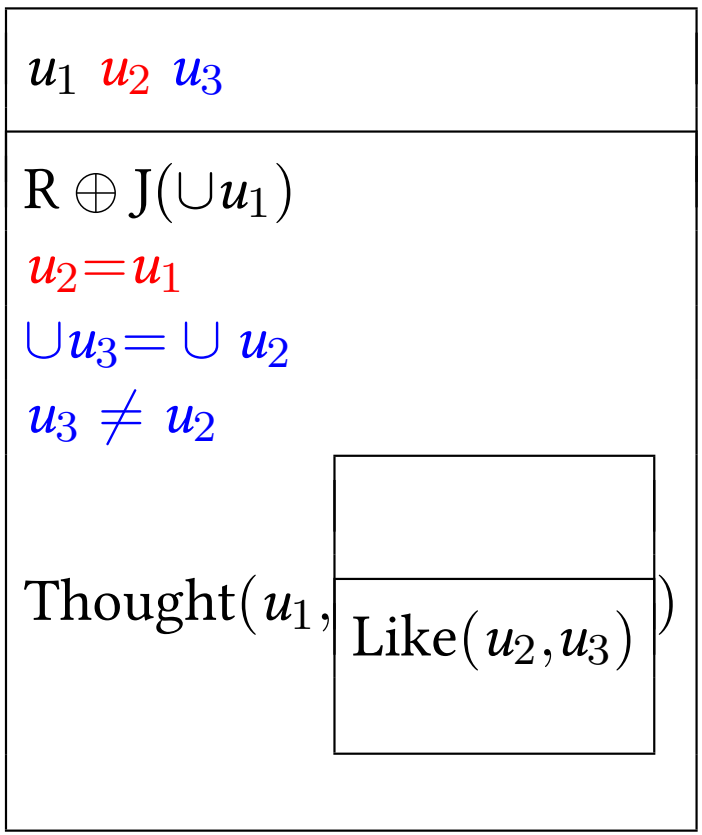
Not possible:



	u_1	w	u_2	u_3
s_1	R	w_1	R	$\mathcal{J}$
s_2	$\mathcal{J}$	w_2	$\mathcal{J}$	R

Reciprocal scope ambiguity

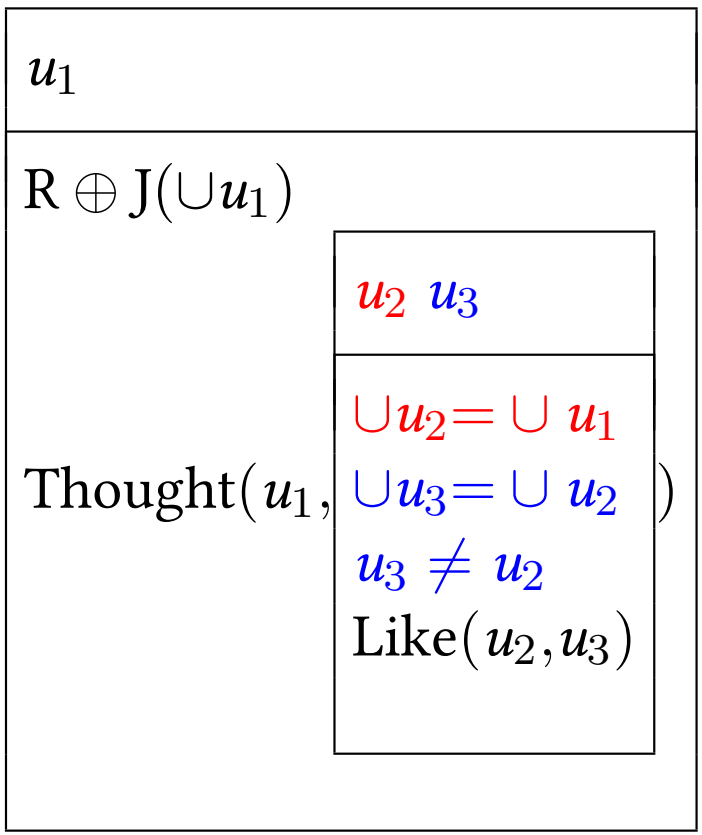
(14) [Romeo and Juliet]^1 think that they^2 like [each other]^3.
Wide scope: Romeo thinks: "I like Juliet" and Juliet thinks: "I like Romeo."



	u_1	w	u_2	u_3
s_1	R	w_1	R	$\mathcal{J}$
s_2	$\mathcal{J}$	w_2	$\mathcal{J}$	R

Reciprocal scope ambiguity

(15) [Romeo and Juliet]^1 think that they^2 like [each other]^3.
"Crossed reading": Romeo thinks: "Juliet likes me" and Juliet thinks: "Romeo likes me."



	u_1	w	u_2	u_3
s_1	R	w_1	$\mathcal{J}$	R
s_2	$\mathcal{J}$	w_2	R	$\mathcal{J}$

Reciprocal scope ambiguity

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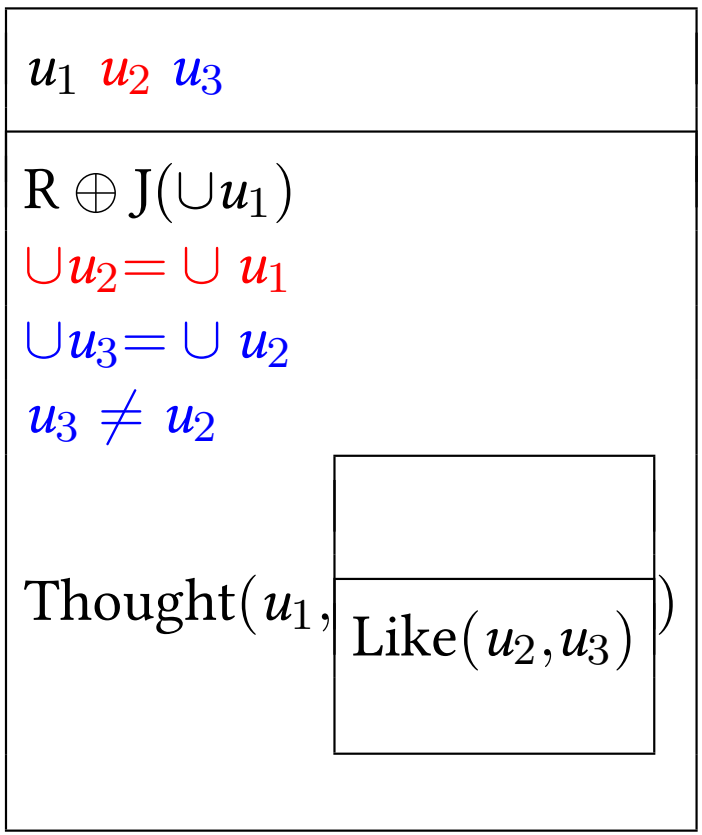

	u_1	w	u_2	u_3
s_1	R	w_1	$\mathcal{J}$	R
s_2	$\mathcal{J}$	w_2	R	$\mathcal{J}$

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Multiple reciprocals

(16)

罗密欧	和	朱丽叶	喜欢	彼此。
Luómìōu	hé	Zhūlìyè	xǐhuān	**bǐcǐ**.
Romeo	and	Juliet	like	BICI

‘Romeo and Juliet like each other.’

Multiple reciprocals

(16) 罗密欧 和 朱丽叶 喜欢 彼此。
Luómìōu hé Zhūlìyè xǐhuān **bǐcǐ**.
Romeo and Juliet like BICI
'Romeo and Juliet like each other.'

(17) 罗密欧 和 朱丽叶 互相 喜欢。
Luómìōu hé Zhūlìyè **hùxiāng** xǐhuān.
Romeo and Juliet HUXIANG like
'Romeo and Juliet like each other.'

Multiple reciprocals

(16) 罗密欧 和 朱丽叶 喜欢 彼此。
Luómìōu hé Zhūlìyè xǐhuān **bǐcǐ**.
Romeo and Juliet like BICI
'Romeo and Juliet like each other.'

(17) 罗密欧 和 朱丽叶 互相 喜欢。
Luómìōu hé Zhūlìyè **hùxiāng** xǐhuān.
Romeo and Juliet HUXIANG like
'Romeo and Juliet like each other.'

(18) 罗密欧 和 朱丽叶 互相 喜欢 彼此。
Luómìōu hé Zhūlìyè **hùxiāng** xǐhuān **bǐcǐ**.
Romeo and Juliet HUXIANG like BICI
'Romeo and Juliet like each other.'

Multiple reciprocals

(19) Romeo and Juliet each like the other.

Multiple reciprocals

(19) Romeo and Juliet each like the other.

(20) *Romeo and Juliet each like each other.

Multiple reciprocals

(21)

罗密欧	和	朱丽叶	互相	喜欢	彼此。
Luómìōu	hé	Zhūlìyè	**hùxiāng**	xǐhuān	**bǐcǐ**.
Romeo	and	Juliet	HUXIANG	like	BICI

‘Romeo and Juliet like each other.’

Multiple reciprocals

(21) 罗密欧 和 朱丽叶 互相 喜欢 彼此。
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Romeo and Juliet HUXIANG like BICI
'Romeo and Juliet like each other.'

u_1 u_2
$\mathrm{R} \oplus \mathrm{J}(\cup u_1)$
$\cup u_2 = \cup u_1$
$u_2 \neq u_1$
$\cup u_2 = \cup u_1$
$u_2 \neq u_1$
$\mathrm{Like}(u_1, u_2)$

Feedback

Summary

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- Sentences introduce discourse referents and conditions on these drefs.

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- DRSs are built up from sentences, which are in turn built up from words.
- DRSs are relations between plural information states.
- Anaphors get resolved at a separate presuppositional rather than semantic layer.
- Reciprocals can be analysed using a relational approach rather than operator-based approach.

References I

Dalrymple, Mary, Makoto Kanazawa, Yookyung Kim, Sam Mchombo, and Stanley Peters. 1998. Reciprocal expressions and the concept of reciprocity. *Linguistics and Philosophy* 21:159–210.

Heim, Irene, Howard Lasnik, and Robert May. 1991. Reciprocity and plurality. *Linguistic Inquiry* 22:63–101.