EXTENSIONS IN COMPOSITIONAL SEMANTICS

Ede Zimmermann (Frankfurt)

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- Compositionality of *meaning* is usually illustrated in terms of *extensions.*

- However, extensions are mostly beyond speakers's knowledge, and so their compositionality appears beyond the point.

- Why not illustrate compositionality in terms of *intensions*, which are (arguably) known to speakers?

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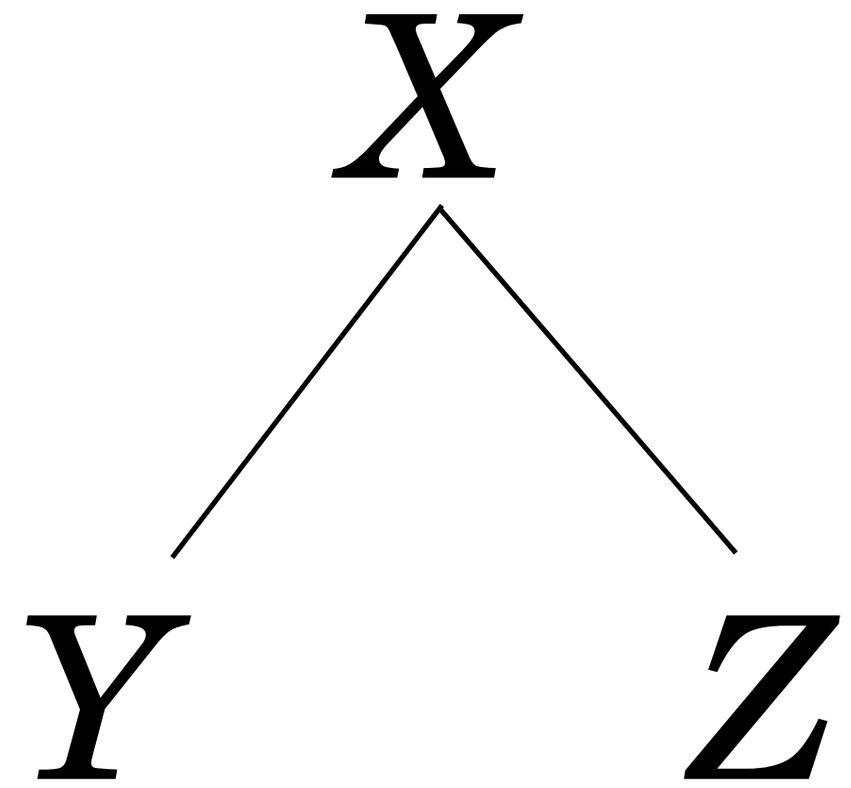
- Why not use Fregean *senses* (or hyper-intensions, or …)?

- Because they do not even support extensional compositionality …

- But intensions do:


X
Y
Z

$$X = Y + Z$$

Extensional Compositionality

$$[\![X]\!] = [\![Y]\!] \oplus [\![Z]\!]$$

Extensional Compositionality

$$[\![X]\!]^i$$

$$=$$

$$[\![Y]\!]^i \oplus [\![Z]\!]^i$$

Intensional Compositionality

$$\hat{[\![X]\!]}$$

$$=$$

$$\hat{[\![Y]\!]} \hat{\otimes} \hat{[\![Z]\!]}$$

Intensional Compositionality

$$[\lambda i.[\![X]\!]^i]$$

$$=$$

$$[\lambda i.[\![Y]\!]^i] \hat{\otimes} [\lambda i.[\![Z]\!]^i]$$

Extensional Compositionality

pointwise

$$[\![X]\!]^i$$

$$=$$

$$[\![Y]\!]^i \quad \oplus [\![Z]\!]^i$$

... implies

Intensional Compositionality

$$[\lambda i.[\![X]\!]^i] =$$

$$[\lambda i.[\![Y]\!]^i \oplus [\![Z]\!]^i]$$

Intensional Compositionality

$$[\lambda i.[\![X]\!]^i]$$

$$=$$

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Intensional Compositionality

$$[\lambda i.[\![X]\!]^i]$$

$$=$$

$$[\lambda i.[\![Y]\!]^i \quad \oplus [\![Z]\!]^i]$$

$$||$$

$$[\lambda i.[\![Y]\!]^i](i)$$

Intensional Compositionality

$$[\lambda i.[\![X]\!]^i]$$

$$=$$

$$[\lambda i.[\![Y]\!]^i \oplus [\![Z]\!]^i]$$

$$||$$

$$\hat{}[\![Y]\!](i)$$

Intensional Compositionality

$$[\lambda i.[\![X]\!]^i]$$

$$=$$

$$[\lambda i.[\![Y]\!]^i \oplus [\![Z]\!]^i]$$

$$\| \qquad \|$$

$$\hat{}[\![Y]\!](i) \quad \hat{}[\![Z]\!](i)$$

Intensional Compositionality

$$[\lambda i.[\![X]\!]^i]$$

$$=$$

$$[\lambda i.\hat{}[\![Y]\!](i) \oplus \hat{}[\![Z]\!](i)]$$

Intensional Compositionality

$$[\lambda i.[\![X]\!]^i]$$

$$=$$

$$[\lambda i.\hat{}[\![Y]\!](i) \oplus \hat{}[\![Z]\!](i)]$$

$$=$$

$$\hat{}[\![Y]\!] \hat{\otimes} \hat{}[\![Z]\!]$$

Intensional Compositionality

$$\hat{}[\![X]\!]$$

$$=$$

$$[\lambda i.\hat{}[\![Y]\!](i) \oplus \hat{}[\![Z]\!](i)]$$

$$=$$

$$\hat{}[\![Y]\!] \mathbin{\hat{\otimes}} \hat{}[\![Z]\!]$$

Extensional Compositionality

$$[\![X]\!]^i = [\![Y]\!]^i \oplus [\![Z]\!]^i$$

Extensional Compositionality

$$\forall_i [\![X]\!]^i = [\![Y]\!]^i \oplus [\![Z]\!]^i$$

Extensional Compositionality

$$\forall_i [\![X]\!]^i = [\![Y]\!]^i \oplus [\![Z]\!]^i$$

=>

Intensional Compositionality

$$\hat{}[\![X]\!] = \hat{}[\![Y]\!] \hat{\otimes} \hat{}[\![Z]\!]$$

Extensional Compositionality

$$\forall_i [\![X]\!]^i = [\![Y]\!]^i \oplus [\![Z]\!]^i$$

=>

Intensional Compositionality

$$\mathrm{E}\hat{\otimes} \hat{}[\![X]\!] = \hat{}[\![Y]\!] \hat{\otimes} \hat{}[\![Z]\!]$$

Extensional Compositionality

$$\forall_i [\![X]\!]^i = [\![Y]\!]^i \oplus [\![Z]\!]^i$$

$$\neq>$$

$ensitive Compositionality

$$\exists\# \ \$[\![X]\!] = \ \$[\![Y]\!] \ \# \ \$[\![Z]\!]$$

Extensional Compositionality

$$\forall_i [\![X]\!]^i = [\![Y]\!]^i \oplus [\![Z]\!]^i$$

$$\neq\!>$$

$ensitive Compositionality

$$\exists\# \ \$[\![X]\!] = \$[\![Y]\!] \# \$[\![Z]\!]$$

$$\| \qquad \| \qquad \|$$

$$\hat{}[\![YZ]\!] + x \quad \hat{}[\![Y]\!] + y \quad \hat{}[\![Z]\!] + z$$

$$\neq \hat{}[\![YZ']\!] + x'$$

Extensional Compositionality

$$\forall_i [\![X]\!]^i = [\![Y]\!]^i \oplus [\![Z]\!]^i$$

$$\neq\!>$$

$ensitive Compositionality

$$\exists\# \ \$[\![X]\!] = \$[\![Y]\!] \# \$[\![Z']\!]$$

$$\| \qquad \| \qquad \|$$

$$\hat{}[\![YZ]\!] + x \quad \hat{}[\![Y]\!] + y \quad \hat{}[\![Z]\!] + z$$

$$\neq \hat{}[\![YZ']\!] + x'$$

MERKE

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- Extensional compositionality supports intensional compositionality

MERKE

- Extensional compositionality supports intensional compositionality
- … but not $ensitive compositionality.

ALLES GUTE ZUM GEBURTSTAG,

ALLES GUTE ZUM GEBURTSTAG, ANGELIKA!