

Ontological Commitment & Ontological Commitments

SQA (1)

$\forall x (\text{Natural}(x) \rightarrow \text{Integer}(x))$

FA (2)

$\forall x (\text{Integer}(x) \rightarrow \text{Exist}(x))$

(3)

$\forall x (\text{Natural}(x) \rightarrow \text{Exist}(x))$

+

(4)

$\exists x \text{Natural}(x)$

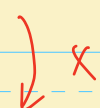
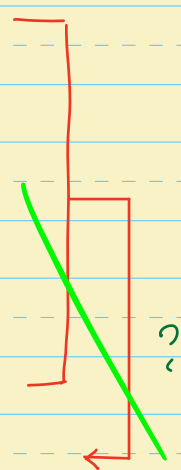
$\neg(4) \neq (3)$

(5)

$\forall x (\text{Natural}(x) \leftrightarrow (\text{Integer}(x) \wedge \neg \text{Negative}(x)))$

Define Natural(x)

(5) \neq (1)



X

PQA

'identity'

'is among'

(cannot be empty)

$$(6) \quad x \equiv y \leftrightarrow \text{def } \forall z (z \leq x \leftrightarrow z \leq y)$$

uniqueness 'the'

'there are'

$$(7) \quad \exists! x \phi(x) \leftrightarrow \text{def } \exists x (\phi(x) \wedge \forall y (\phi(y) \rightarrow x=y))$$

(8)

$$\exists x \forall y (y \leq x \leftrightarrow \text{Integer}(y)) \leftrightarrow \text{Integer}(x)$$

In plural logic

$$x \equiv y \leftrightarrow \exists x \text{Integer}(x)$$

Integers exist.

$$+ (1) \quad \forall x (\text{Natural}(x) \rightarrow \text{Integer}(x))$$

$$+ (4) \quad \exists x \text{Natural}(x)$$

X

↓

↓

↑

$$\neg(4) \neq (9)$$

(9)

$$\exists x \forall y (y \leq x \leftrightarrow \text{Natural}(y))$$

Natural numbers exist.

$$(1), (9) \neq (8)$$

(10)

$$\exists x \text{Natural}(x) \rightarrow \exists x \forall y (y \leq x \leftrightarrow \text{Natural}(y))$$

logic + truth in s.p.l.

$$(4) \neq (9)$$

(11)

$$\exists x \forall y (y \leq x \leftrightarrow \text{Integer}(y)) \rightarrow \exists z (\text{Integer}(z) \wedge \neg \text{Negative}(z))$$

use (5) idea

$$(5), (8), (11) \neq (9)$$

(12)

$$\neg \exists x (\text{Integer}(x) \wedge \text{Negative}(x))$$

(13)

$$\exists x \forall y (y \leq x \leftrightarrow \text{Integer}(y)) \rightarrow \exists z (\text{Integer}(z) \wedge \text{Negative}(z))$$

$$(12), (1) \neq (13)$$

(14)

$$\forall x (Tiger(x) \rightarrow Mammal(x))$$

(15)

$$\exists x Tiger(x)$$

(16)

$$\exists x Mammal(x) \rightarrow \exists x Tiger(x)$$

