

Trevor Teitel "Contingent Existence and the Reduction of Modality to Essence"

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1 Preliminaries

4 schema $\Box p \rightarrow \Box \Box p$

B schema $p \rightarrow \Box \Diamond p$

Contingentism $\neg \forall x \Box \exists y (y = x)$ or $\exists x \Diamond \neg \exists y (y = x)$

Standard Contingentism $\exists p \Diamond (\exists x x \Box_{xx} p \wedge \Diamond \neg \exists x x \Box_{xx} p)$

Non-Standard Contingentism $\forall p \Box (\exists x x \Box_{xx} p \rightarrow \Box \exists x x \Box_{xx} p)$

Modality to Essence $\Box p = \exists x x \Box_{xx} p$; $\Box p = \exists x x \forall y y (yy \sqsubseteq xx \wedge \Box_{xx} p)$

Robustness $\forall p \Box (\Box p = \exists x x \Box_{xx} p)$ ¹

¹What about $\Box \forall p (\Box p = \exists x x \Box_{xx} p)$?

2 The tension

2.1 The tension with S4

Standard Contingentism $\implies \exists p \diamond (\Box p \wedge \diamond \neg \Box p) \implies \exists p \neg \Box (\Box p \rightarrow \Box \Box p) \implies \neg \forall p \Box (\Box p \rightarrow \Box \Box p)$

S4 $\implies \Box (\Box p \rightarrow \Box \Box p) \implies \forall p \Box (\Box p \rightarrow \Box \Box p)$

2.2 The tension with B

(*) $\forall p \Box (\exists xx \Box_{xx} p \rightarrow \Box (\neg \exists xx \Box_{xx} p \rightarrow \neg \exists xx \Box_{xx} \diamond p))$

(*) $\implies \forall p \Box (\Box p \rightarrow \Box (\neg \Box p \rightarrow \neg \Box \diamond p)) \implies \forall p \Box (\Box p \rightarrow \Box (\Box \diamond p \rightarrow \Box p))$ (1)

Standard Contingentism $\implies \exists p \diamond (\Box p \wedge \diamond \neg \Box p)$ (2)

(1)+(2) $\implies \exists p \diamond (\Box p \wedge \neg \Box \Box p \wedge \Box (\Box \diamond p \rightarrow \Box p)) \implies \exists p \diamond (\Box p \wedge \neg \Box \Box \diamond p) \implies \exists p \diamond \neg (\Box p \rightarrow \Box \Box \diamond p) \implies \neg \forall p \Box (\Box p \rightarrow \Box \Box \diamond p)$

B $\implies \Box (p \rightarrow \Box \diamond p) \implies \Box (\Box p \rightarrow \Box \Box \diamond p) \implies \forall p \Box (\Box p \rightarrow \Box \Box \diamond p)$

3 Possible Replies

Rejecting Contingentism; favoring Non-standard contingentism; rejecting S4 or B;
rejecting canonical reduction of modality to essence

3.1 Non-standard contingentism

contingentism & higher-order necessitism: if p is essential to some xx then p is also essential to the haecceities of the objects contained in xx.

First-order necessitism and higher-order necessitism?

3.2 Mere possibilia

It is non-contingent what possible objects there are.

Problems: possible objects=actual objects=all of the objects there are; failing to reduce modality to something inherently non-modal (modal realism, abstract objects)

3.3 Cumulative essences

The cumulative reduction to essence: $\Box_n p = \exists x x_n \forall y y_n (y y_n \sqsubseteq x x_n \wedge \Box_{x x_0 \sqcup x x_1 \sqcup \dots \sqcup x x_n} p)$

i.e. $\Box \Box p = \exists x x_0 \forall y y_0 (y y_0 \sqsubseteq x x_0 \wedge \Box_{x x_0} \Box p) = \exists x x_0 \forall y y_0 (y y_0 \sqsubseteq x x_0 \wedge \Box_{x x_0} (\exists x x_1 \forall y y_1 (y y_1 \sqsubseteq x x_1 \wedge \Box_{x x_0 \sqcup x x_1} p)))$

Worries: the translation of the operator into essence-theoretic terms can change across modal contexts; fineness of grain: $\Box \Box p = \exists q ((q = \Box p) \wedge q)$