REMARK ON CRESSWELL ON SO.5

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In his note [2] directed against Routley's claim in [3] that SO.5 is (informally) incomplete for the construal of $\Box$ as 'it is tautologous (by truth table) that', Max Cresswell suggests that it is an open question whether a *proposition* can have the form $\Box p$ and also the form $q \supset q$, say. Hence, his argument continues, it is an open question wether $\sim\Box\Box p$ should be counted a logically true under the proposed construal, and hence a logic for this construal should not make $\sim\Box\Box p$ come out as valid, contrary to Routley's claim.

However, if Cresswell's argument here is valid, then it destroys *inter alia* his own ingenious proposal, in [1], for construing the modalities in non-normal modal logics like S2 and S3. If it is an open question whether a proposition can have both the form $\Box p$ and the form $q \supset q$, then there is no reason for the proposition expressed by 'p is a law of thought' to be counted automatically as false in the queer worlds (where there are no thinkers and hence no laws of thought), just because this proposition might also have the form $q \supset q$, and $q \supset q$ is true even in queer worlds. Hence if the argument of [2] is accepted, the logic of 'it is a law of thought that' should also be SO.5.

Indeed, if a proposition can have both the form $\Box p$ and the form $q \supset q$, then presumably its negation can have both the form $\sim\Box p$ and the form $\sim(q \supset q)$. But this prevents us from construing S5 in any ordinary way, for then $\sim\Box p \supset \Box\sim\Box p$ is valid, so is $\sim\Box\sim(q \supset q)$, and hence S5 cannot countenance propositions with both the form $\sim\Box p$ and the form $\sim(q \supset q)$.

As a matter of judgement (and that is all it can be) it seems to me that the intuitive reasonableness of the construals suggested in [1] and the usual construals of S5 shows that the argument of [2] is too strong, and that Routley's claim of incompleteness has not been refuted by this argument.

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[2] CRESSWELL, M. J. "Note on the interpretation of SO.5" *Logique et Analyse* No. 51 (1970) pp. 376-378.

[3] ROUTLEY, R. "The decidability and semantical incompleteness of Lemon's system S0.5" *Logique et Analyse* No. 43 (1968) pp. 413-421.