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On Carnap Sentences

Panu Raatikainen

In (Raatikainen 2010), an old argument of Scheffler (1963) against the once again popular view that the real content of a theory is exhausted by its Ramsey sentence was revitalized. One can make some countermoves, but in the end the argument can be shown to be basically correct (see Raatikainen 2010).

In the present paper the tools of this argument are applied to another influential view, namely to the proposal that the *analytical component* of a theory is captured by its 'Carnap sentence'. Recall that if S is a theory and S^{R} its Ramsey sentence, the corresponding Carnap sentence is the implication ($S^{\mathrm{R}} \rightarrow S$). The idea (originally suggested by Carnap) that such a Carnap sentence corresponds to the analytical part of a theory – more exactly, that the analytical truths of a theory are the consequences of its Carnap sentence – seems to enjoy some popularity. Note in particular that this view implies that Carnap sentences themselves are analytically true.

The above-mentioned argument of Scheffler focuses on inductive rather than only deductive relations between theories, their Ramsey sentences, and observations. Similar considerations can be also extended to Carnap sentences.

Consider again the following simple theory S,[1] where O_1 and O_2 are assumed to be (possibly complex) observational predicates, and T a theoretical predicate:

$$S \qquad \forall x\, [(T(x) \rightarrow O_1(x)) \ \wedge\ (T(x) \rightarrow O_2(x))]$$

By Ramsifying this, we get

$$S^R \qquad \exists X\, \forall x\, [(X(x) \rightarrow O_1(x)) \ \wedge\ (X(x) \rightarrow O_2(x))].$$

Now S is contingent, but S^R, its Ramsey sentence, is in fact a truth of second-order logic. It must be granted that S itself has no *deductive* observational consequences, but arguably one can nevertheless achieve *inductive* confirmation or disconfirmation for it (see Raatikainen 2010) – but obviously not for S^R. This is the crux of Scheffler's argument.

But consider then the Carnap sentence of S, that is, the implication ($S^R \rightarrow S$). As its antecedent is logically true, the whole implication is logically equivalent to the original (non-Ramsified) theory S (it is true iff the latter is true). Consequently, a possible empirical disconfirmation of S – and there could be one – counts simultaneously as disconfirmation of the Carnap sentence of S. However, Carnap sentences were supposed to be, according to the view at issue here, analytically true. But surely it should not be possible for analytical truths to be empirical disconfirmed (unless meaning change

[1] This theory can be viewed as a simplified version of Hempel's theory of 'white phosphorus' (Hempel 1958, 214-15).

occurs). Hence, the argument suggests that the popular view that Carnap sentences capture the analytical contents of theories must be wrong.

P.O. Box 24, FIN-00014 University of Helsinki, Finland

panu.raatikainen@helsinki.fi

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