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ON A SYNTACTICAL CHARACTERIZATION OF LOGICAL EXPRESSIONS

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In *The Logical Syntax of Language*, Rudolf Carnap proposed the following characterization of logical and descriptive expressions:

> Let E_1 be the product of all expressional classes E_i of [a language] S, which fulfil the following four conditions. . . . 1. If U_1 [is an expression of any form which] belongs to E_i, then U_1 is not empty and there exists a sentence which can be sub-divided into partial expressions in such a way that all belong to E_i and one of them is U_1. 2. Every sentence which can be thus sub-divided into expressions of E_i is determinate. 3. The expressions of E_i are as small as possible, that is to say, no expression belongs to E_i that can be sub-divided into several expressions of E_i. 4. E_i is as comprehensive as possible, that is to say, it is not a proper sub-class of a class which fulfils both (1) and (2). An *expression* is called logical (U_L) if it is capable of being sub-divided into expressions of E_1; otherwise it is called descriptive (U_D). A *language* is called *logical* if it contains only [logical symbols] a_L; otherwise *descriptive*.[1]

Although this characterization has often been found unacceptable,[2] I do not believe that anyone has ever pointed out how badly and simply it fails. W. V. Quine had a "would-be" argument in "Carnap and Logical Truth"[3] which is along the lines that I have in mind. Quine considered adding the extra-logical general term 'heavier than' to a language in which Carnap's dichotomy supposedly held. Quine then asked whether adding general rules

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1. Rudolf Carnap, *The Logical Syntax of Language*, Routledge and Kegan Paul, London (1967), pp. 177-178. (I have made obvious inconsequential changes in notation to avoid Carnap's German symbolism.)

2. See, e.g., W. V. Quine, "Carnap and Logical Truth" in *The Ways of Paradox and Other Essays*, Random House, New York (1966), especially section 7.

3. *Ibid.*, pp. 116-117.

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