Notre Dame Journal of Formal Logic
Volume 34, Number 2, Spring 1993

The World, the Facts, and Primary Logic

FRED SOMMERS

Thomas Hobbes rightly stated that everything done by the mind is a computation by which is understood either the addition of a sum or the subtraction of a difference. So just as there are two primary signs in algebra, '+' and '−' in the same way there are, as it were, two copulas.

-Leibniz

If, as I hope, I can conceive all propositions as terms, and hypotheticals as categoricals, and if I can treat all propositions universally, this promises a wonderful ease in my symbolism and analysis of concepts, and will be a discovery of the greatest importance.

-Leibniz

Abstract Frege gave priority to propositional logic over term or predicate logics analyzing categorical forms like 'every A is B' and 'some A is B' in terms of compound forms like '$Ax \rightarrow Bx$' and '$Ax \,\&\, Bx$'. Leibniz hoped to do the reverse by treating '$p \rightarrow q$' and '$p \,\&\, q$' as categoricals of form 'every $\{p\}$ is a $\{q\}$' and 'some $\{p\}$ is a $\{q\}$'. More generally he believed it possible to reduce all compound forms to categoricals using the old term connectives 'A', 'E', 'I', 'O'. The paper shows how Leibniz's program of treating propositions as terms and truth functions as term connectives can be realized. Where ordinary nonvacuous terms denote things in the world and signify their characteristics (e.g., 'wise' denotes wise things and signifies wisdom or being wise) propositional terms denote the world itself, signifying facts (e.g., 'There are elks' signifies the existence of elks and denotes the world characterized by their presence). False propositions are vacuous. Because all true propositions denote one and the same world (though signifying different world characteristics) 'some $\{p\}$ is $\{q\}$' (the categorical form of '$p \,\&\, q$' will entail 'every $\{p\}$ is $\{q\}$' ($p \rightarrow q$). The paper shows that this approach regards existence and nonexistence as world properties (facts).

1 The positive and negative copulas[1] Leibniz rightly sees that the terms of a statement such as 'Socrates is wise' or 'some Spaniard is a painter' are joined by a logical copula that has the properties of the addition operator. Take the

Received October 2, 1991; revised October 28, 1992