K. Ono
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INTRODUCTION OF A BASIC THEORY OF OBJECTS

KATUZI ONO

Introduction

In constructing various kind of mathematical theories on the basis of a common basic theory, it has been very usual to take up the set theory as the common basic theory. This approach has been already successful to a certain extent and looks like successfully developable in the future not only in constructing mathematical theories standing on the classical logic but also in constructing formal theories standing on weaker logics. In constructing mathematical theories standing on the classical logic, it has been successful in most cases only by interpreting mathematical notions in the set theory without defining any special interpretation of logical notions. In constructing any mathematical theory standing on weaker logics such as the intuitionistic logic, however, we have to give a special interpretation for logical notions, too.

As it has been my opinion that the basic theory should be as simple and natural as possible, I have tried another approach. I have taken up an extremely simple logic called the primitive logic as our basic theory. It was amazing for me to know that any finitely axiomatizable formal theory standing on either the classical logic or the intuitionistic logic can be constructed on the primitive logic without presupposing any assumption such as axioms. (See my paper [1].) We can establish even intermediate logics in the same way if we restrict ourselves to the proposition logics. (See my paper [2].) This looks like to suggest that more vast class of formal theories including almost all the important mathematical theories are reducible to the primitive logic. Simply speaking, our only problem is how to axiomatize each formal theory in a finite number of axioms.

According to my opinion, however, we are trying to construct formal theories in some basic theory because we are seeking after something universal

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