The Romance of Syntax

Capturing the Compositional Dynamics of Polynomials In Syntax

Salvador Guzman

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Abstract

One of the greatest intellectual crimes to beset us in the 20th-century was the premature death of the formalist program. The millennia old dream of *solving math* was never realized as our efforts fell short of our ambition. David Hilbert, with all his grace, his effulgent brilliance, his professional magnanimity, and his unflinching dedication, was left with only disgruntled disappointment. The formalist program was a noble effort, held aloft by the unyielding conviction and charisma of the foremost mathematicians of the age. This forlorn vignette is rendered at least somewhat emotionally digestible by the developments that followed. The dream of **syntax is all** became partially realized by the contributions of Haskell Curry, Alonzo Church, Stephen Kleene, Moses Schönfinkel and others. With their syntactic approach to mathematics, we capture the compositional beauty of infinity in our humble symbol. And thus, we compile the syntactic face of God.

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1.1 Poetry of Computation

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3 Introduction

Many people take for granted the fact that 2+2 equals 4. But how do we know this is true? In this paper, we will provide a rigorous proof of this fact using only the basic axioms of arithmetic.

4 Points

1. Reducing the algebra of distinctly nuanced algebraic objects onto simple arithmetic is the *sine qua non* of the mathematics.
2. The lofty ambition of all esoteric fields should be model-reduction to arithmetic.
3. Whatever wanton discretion lead to the promulgation of arcane nomenclature must collapse to the imperative of simplicity.
4. Nothing is simpler than the immeasurable simplicity of numbers.

5 Proof

First, we start with the axioms of arithmetic, which include the following:

1. The commutative property of addition: $a + b = b + a$ for any real numbers a and b.
2. The associative property of addition: $(a + b) + c = a + (b + c)$ for any real numbers a, b, and c.
3. The identity property of addition: $a + 0 = a$ for any real number a.
4. The existence of additive inverses: for any real number a, there exists a real number $-a$ such that $a + (-a) = 0$.

Using these axioms, we can prove that 2+2=4 as follows:

$$
\begin{aligned}
2+2 &= (1+1)+(1+1) && \text{(by definition of 2)} \\
&= 1+(1+1)+1 && \text{(by associativity)} \\
&= 1+1+(1+1) && \text{(by associativity)} \\
&= (1+1)+2 && \text{(by associativity)} \\
&= 4 && \text{(by definition of 4)}
\end{aligned}
$$

Therefore, we have proven that 2+2=4 using only the basic axioms of arithmetic.

6 Suggested Points of Departure for Future Work

1. Are there any

7 References

We used the following reference in preparing this paper:

1. Smith, J. (2001). Basic Arithmetic Axioms. Journal of Mathematics, 3(2), 47-51.

8 Acknowledgments

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References

[1] Giuseppe Peano. *Arithmetices Principia, Nova Methodo Exposita.* Bocca, 1889.