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978-1-107-17902-8 — The Significance of the New Logic

Willard Van Orman Quine, Edited and translated by Walter Carnielli, Frederique Janssen-Lauret, William Pickering

Frontmatter

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The Significance of the New Logic

Willard Van Orman Quine was one of the most influential figures of twentieth-century American analytic philosophy. Although he wrote predominantly in English, in Brazil in 1942 he gave a series of lectures on logic and its philosophy in Portuguese, subsequently published as the book *O Sentido da Nova Lógica*. The book has never before been fully translated into English, and this volume is the first to make its content accessible to Anglophone philosophers. Quine would go on to develop revolutionary ideas about semantic holism and ontology, and this book provides a snapshot of his views on logic and language at a pivotal stage of his intellectual development. The volume also includes an essay on logic which Quine also published in Portuguese, together with an extensive historical-philosophical essay by Frederique Janssen-Lauret. The valuable and previously neglected works first translated in this volume will be essential for scholars of twentieth-century philosophy.

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Contents

Acknowledgments	page vii
Editors' Introduction	
<i>Walter Carnielli, Frederique Janssen-Lauret, and William Pickering</i>	viii
Willard Van Orman Quine's Philosophical Development in the 1930s and 1940s	
<i>Frederique Janssen-Lauret</i>	xiv
THE SIGNIFICANCE OF THE NEW LOGIC	
<i>Willard Van Orman Quine</i>	1
Contents and Prefaces	3
Introduction	9
I The Theory of Composition	18
II Theory of Quantification	47
III Identity and Existence	80
IV Class, Relation, and Number	105
<i>List of Principles Most Often Referred to in the Text</i>	139
<i>Definitions</i>	141
<i>Bibliography</i>	142
APPENDIX: THE UNITED STATES AND THE REVIVAL OF LOGIC	
<i>Willard Van Orman Quine</i>	145
<i>Notes</i>	158
<i>Index</i>	163

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Frontmatter

[More Information](#)

Acknowledgments

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Editors' Introduction

Walter Carnielli, Frederique Janssen-Lauret, and William Pickering

“So I was embarked on my fourth book, *O Sentido da Nova Lógica*,” says Quine in his *The Time of My Life: An Autobiography* (Quine 2000, 173). In 1942, he was writing his lectures out in full, in what he modestly considered to be his faulty Portuguese: “I was getting portions [of the book] mimeographed so that the students could study them, and furthermore I wanted to leave my lectures in Brazil as a book so as to have more impact than could be hoped for through a small group in the classroom.”

The study of logic was introduced in Brazil through the scholastically oriented philosophy courses taught in Jesuit schools. Not entirely disconnected from this tradition, the positivist influence on the understanding of logic in Brazil was strengthened at the end of the nineteenth century. The influence of positivist philosophy was so strong in this era that the Brazilian national flag, adopted in 1889, carries a positivist motto: *Ordem e Progresso*, or “Order and Progress.”

The first book written in Brazil that makes reference to mathematical logic was *As Idéas Fundamentaes da Mathemática* by Manuel Amoroso Costa, published in 1929 (Amoroso Costa 1929). However, it was only in 1940 that a book exclusively dedicated to symbolic logic went to print in the country. This book, *Elementos de Lógica Matemática* by Vicente Ferreira da Silva (Ferreira da Silva 1940), placed logic as the basis of philosophical activity.

A lawyer with a keen interest in existentialist philosophy, Ferreira da Silva ended up acting as assistant to Quine during his stay and helped him with the editing of *O Sentido*. Quine knew Ferreira da Silva from reviewing his 116-page booklet, which Quine referred to as “an introduction to modern logic and, secondarily, to logical empiricism.” Quine’s review criticized Ferreira da Silva’s proposal to divide meaningful from meaningless propositions, a mode of division that “has no apparent advantage over the more usual one, which

subsumes the valid under the true and the invalid (or contravalid) under the false and extrudes the meaningless from the category of propositions altogether" (Quine 1941, 110).

However, the true inauguration of the contemporary phase of Brazilian logic occurred with the visit of Willard Van Orman Quine, in a course taught at the Free School of Sociology and Politics of São Paulo from June to September 1942. Quine's visit significantly contributed to an increased interest in logic among Brazilians and resulted two years later in the publication of the course material, in Portuguese, as *O Sentido da Nova Lógica*.

O Sentido is divided into four chapters: I – Theory of Composition, II – Theory of Quantification, III – Identity and Existence, and IV – Class, Relation, and Number. As Quine explains in the book's preface (Quine 1944, 9), the specific logical systematization used in the book results from an effort to reconcile three ideals: rigor in theoretical details, convenience in practical applications, and simplicity in presentation. This last ideal, he added, was the main objective.

In the first chapter of the book, "Theory of Composition," after "an illuminating introduction," as one reviewer put it (Bennett 1945, 509), Quine claims that it is convenient to consider logic as containing two parts: the theory of deduction and the theory of classes. The theory of deduction is divided into two other parts: composition theory and quantification theory. The purpose of this first part of the book is to provide the necessary means of preparation for a technical study of more advanced topics.

The second chapter of the book, "Theory of Quantification," takes on the work of Gottlob Frege, which according to the author was responsible for most of the content of modern logic; this includes the creation of quantification theory, which governs the use of prefixes called quantifiers.

The third chapter, "Identity and Existence," emphasizes the contrast between object and symbol. Here Quine deals with the concept of identity, for him a notion so simple and fundamental that it hardly admits explanation in clearer terms. Only one kind of existence is accepted – material existence in the case of physical objects. Quine tries to clarify certain confusions related to the concept of identity, and presents what he considers the fundamental principles of identity, such as the principle of the substitutivity of identity, the principle of the transitivity of identity, the principle of the symmetry of identity, and the principle that every object is identical to some object. An argument is presented for the elimination in logic of all substantives other than pronouns. In this part, Quine also deals with the topics of sense, synonymy, and necessity.

The last chapter of the book, “Class, Relation, and Number,” aims to clarify how mathematics depends on abstract objects such as numbers, functions, and relations, and how these are reducible to notions of classes and attributes.

From 1936 to 1939, Quine had taught courses in mathematical logic in the Department of Mathematics at Harvard as Faculty Instructor (in 1941 he was promoted to Associate Professor). The result of these courses was his book *Mathematical Logic* of 1940. According to Quine, he was still strongly influenced by *Principia Mathematica* at the time, and as early as 1940, when he prepared *Mathematical Logic* for publication, he considered that Frege's *Begriffsschrift* (1879) was the “true beginning of mathematical logic.” It was this influence that was passed on to the Brazilian logicians.

In his Brazilian publications, Quine argued that the discovery of the paradoxes and of the possibility of defining other notions (such as the infinitesimal and the imaginary numbers) on the basis of more fundamental concepts, had contributed to what he called the resurgence of logic. This view was fundamental to the turn of logic in Brazil, as was Quine's presentation – the first in Portuguese – of Kurt Gödel's incompleteness theorem of 1931, summarized by Quine as “Given any systematization of logic, there will be logical truths, and even arithmetical truths, that are provably unprovable” (Quine 1944, 20).

This turn occurred ten years later, in the 1950s, with the work of Brazilian logicians such as Edson Farah, Newton Carneiro Affonso da Costa, Jacob Zimbarb, and Benedito Castrucci at the University of São Paulo, Mario Tourasse Teixeira at UNESP in Rio Claro, Leonidas Hegenberg at the Aeronautics Technology Institute of São José dos Campos, and Jorge Barbosa of the Fluminense Federal University in Rio de Janeiro. It is the students of these men who today occupy a central position in logic research in Brazil and are responsible for the consolidation of the Brazilian school of logic.

Quine, in his course in São Paulo, not only argued that the limitations of Aristotelian logic justified the need for a new logic, but also that the need for a new logic had become urgent with the development in mathematics of the “higher infinity” of infinite numbers and classes. If, on the one hand, mathematical paradoxes simultaneously threatened but also stimulated the development of modern logic, only a more sophisticated logic could establish the foundations of mathematics and avoid the emergence of new paradoxes. In this context, the interest in new types of logic (such as paraconsistent logic) that developed in the Brazilian community, even though distantly connected to the figure of Quine, does not sound so strange.

It is inevitable to compare the topics covered by Quine in his *O Sentido da Nova Lógica* with Alfred Tarski's *Introduction to Logic and the Methodology*

of *Deductive Sciences*, first published in Polish in 1936, then in German in 1937, and finally in English, in an expanded version, in 1941 (Tarski 1941; see also Murawski 1998). This is hardly a surprise if we look closely at the transcriptions and translations of the conversations between Carnap, Tarski, and Quine on nominalism and finitism (Frost-Arnold 2013). Tarski's work, as much as Quine's book of 1944, helped shape the reception of the methodology of deductive sciences in the twentieth century.

On July 30, 1942, Quine gave a public lecture, which he described as "well attended," at the United States–Brazil Cultural Union in São Paulo. Entitled *Os Estados Unidos e o Ressurgimento da Lógica* (The United States and the Revival of Logic), this talk highlights the symbolic tools of mathematical logic and makes a commendable defense of modern logic, which Quine considered a revolutionary and promising movement. This lecture, published in Quine 1945 and Quine 2004, and mentioned in the preface to *O Sentido da Nova Lógica*, is a quite natural complement to Quine's textbook and is translated in this volume.

Quine's unique Brazilian book was not received without criticism. For instance, Bennett 1945 warns of the risk that the reader might think that all important problems in logical theory have been disposed of, and adverts that "the book is not equipped with exercise material, nor designed for classroom drill" (509). The reviewer also regrets that "the confident tone and clear, enthusiastic and well organized statements commend the book to all thoughtful readers – who read Portuguese" (510).

Those interested in this phase of Quine's work now no longer have cause for regret. The translation we offer of *O Sentido da Nova Lógica* fills a gap that has long been noticed by scholars, and should also contribute to clarifying how this remarkable book was seminal not only for the consolidation of the study of logic in Brazil, but for the later research of Quine himself. As N. C. da Costa recognizes in his review, "Quine's book was very important for the development of logic and its philosophy in Brazil; several Brazilian logicians and philosophers, in effect, began their logic studies with Quine's book" (da Costa 1997, 688).

As for the role of this book in the development of Quine's views, his account of the problem of interpreting modal logic, and in particular of the failure of intersubstitutivity of co-referential names in modal contexts (a question that has inspired a vast literature), also originates with his work in Brazil, as reported on p. 173 of his autobiography (Quine 2000):

I thus questioned [in my classes], in particular, the coherence of admitting bound variables into contexts governed by modal operators of necessity and possibility. Eager to put these latter bits of *O Sentido* before English readers, I dictated

a translation of my Portuguese to an English stenographer in São Paulo under the title “Notes on Existence and Necessity.”

This volume thus includes several passages that appeared in English in “Notes on Existence and Necessity” (published in 1943, a year before *O Sentido*). With regard to these passages, we have incorporated Quine’s own words into the translation insofar as we think they are faithful to the original Portuguese. Footnotes and comments indicate these passages and note where Quine’s published English text diverges from the Portuguese equivalent.

There are three types of footnote in this volume. Quine’s original notes are indicated with Roman numerals (i, ii, iii, etc.); his notes from the second edition alphanumerically (a, b, c, etc.); and our own editorial notes with Arabic numerals (1, 2, 3, etc.) at the end of the book.

The translation of *O Sentido* is based on the first edition of 1944, the second edition of 1996 being simply a reprint of the first in modernized orthography. Quine did provide a preface to the second edition, however, and a translation of this short text has been included in the present volume. With regard to the translation of the São Paulo lecture, we have used the reprinted version of 2004 (Quine 2004), as we were not able to obtain a copy of the original published version (Quine 1945).

Quine’s Portuguese was far from faulty. He had attended a second-year Portuguese class at Harvard after a stay in the Azores, and had listened to much short-wave radio from Brazil before he flew to Rio in 1942. However, it has been a challenge to translate a book written in Portuguese back into the native language of the author. This is especially true of an author such as Quine, who helped to shape philosophical and technical terms in the English language and is also known for his clear, lively, and elegant style. The book by Quine in Portuguese is well written in a correct but somewhat flowery style, perhaps influenced by his assistants. However, this style is now more than seven decades away from contemporary language. In the face of these difficulties, we have tried to deliver, if not a Quinean piece, at least a text as clear and concise as possible. Quine would certainly have approved, if not of the result, at least of the efforts.

References

- Amoroso Costa, Manuel. 1929. *As Idéas Fundamentaes da Mathemática*. Rio de Janeiro: Papelaria e Litho-Typographia Pimenta de Mello.
- Bennett, Albert A. 1945. Review of Willard Van Orman Quine, *O Sentido da Nova Lógica*. *Bulletin of the American Mathematical Society*. Vol. 51, No. 7, 509–510.

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Frontmatter

[More Information](#)

Editors' Introduction

xiii

- da Costa, Newton C. 1997. A Review of *O Sentido da Nova Lógica* by W. V. Quine. *The Journal of Symbolic Logic*. Vol. 62, No. 2 (June), 688.
- Ferreira da Silva, Vicente. 1940. *Elementos de Lógica Matemática*. São Paulo: Cruzeiro do Sul.
- Frege, Gottlob. 1879. *Begriffsschrift: Eine der aritmetischen nachgebildete Formelsprache des reinen Denkens*. Halle: Louis Nebert.
- Frost-Arnold, Greg. 2013. *Carnap, Tarski, and Quine at Harvard: Conversations on Logic, Mathematics, and Science*. Series Full Circle: Publications of the Archive of Scientific Philosophy. Chicago, IL: Open Court.
- Murawski, Roman. January 1998–April 2000. Review of Alfred Tarski, *Introduction to Logic and to the Methodology of the Deductive Sciences* (4th edn., 1944). *Modern Logic*. Vol. 8, No. 1/2, 172–175.
- Quine, Willard Van Orman. 1940. *Mathematical Logic*. New York: Norton.
1941. Review of *Elementos de Lógica Matemática* by Vicente F. da Silva. *The Journal of Symbolic Logic*. Vol. 6, No. 3 (September), 109–110.
1943. Notes on Existence and Necessity. *Journal of Philosophy*. Vol. 40, 113–127.
1944. *O Sentido da Nova Lógica*. São Paulo: Livraria Martins Editora.
1945. *Os Estados Unidos e o Ressurgimento da Lógica*. In: A. C. P. e. Silva (ed.), *A Vida Intelectual nos Estados Unidos*. São Paulo: União Cultural Brasil–Estados Unidos, vol. II. pp. 267–286.
1996. *O Sentido da Nova Lógica*. 2nd edn. Curitiba: Editora da UFPR.
2000. *The Time of My Life: An Autobiography*. Cambridge, MA: MIT Press; A Bradford Book.
2004. Os Estados Unidos e o Ressurgimento da Lógica. *Scientiae Studia*. Vol. 2, No. 3, 381–392.
- Tarski, Alfred. 1941. *Introduction to Logic and the Methodology of Deductive Sciences*. Oxford and New York: Oxford University Press.