Annotated bibliography of Nino Cocchiarella

Contents of this Section

This part of the section Ontologists of 19th and 20th centuries includes the following pages:

Books

1. Cocchiarella, Nino. 1966. *Tense Logic: A Study of Temporal Reference*. Unpublished Ph.D. Dissertation, available at ProQuest Dissertation, reference number 6609326.
University of California - Los Angeles, January 7, 1966). Committee in charge: Richard Montague, Charmain, Alfred Horn, Donald Kalish, Abraham Robinson, Robert Stockwell (VI, 251 pages).
N.B. *the unpublished Ph. D. thesis can be ordered to ProQuest Dissertation Express.*
Abstract: "This work is concerned with the logical analysis of topological or non-metrical temporal reference. The specific problem with which it successfully deals is a precise formalization of (first-order) quantificational tense logic wherein both an appropriate formal semantics is developed and a meta-mathematically consistent and complete axiomatization for that semantics given.
The formalization of quantificational tense logic herein presented adheres to all the canons of logical rigor by being carried out entirely as a definitional extension of (Zermelo-Fraenkel) set theory. Model-theoretical techniques are utilized in the semantics given and the notion of a history is formally developed as the tense-logical analogue of the notion of a model for standard first-order logic with identity. Corresponding to the key semantical concept of satisfaction (and consequently of truth) in a model, by means of which the central standard notion of logical truth is defined, the notion of satisfaction (and consequently of truth) in a history at a given moment of that history is developed, from which development, in turn, the central notion of tense-logical truth is defined. An axiomatic characterization of derivability within tense logic, or t-derivability, is then presented and proved to be both consistent and complete, i.e., it is shown that an arbitrary tensed formula is tense-

logically true if and only if it is t-derivable from zero premises, i.e., if and only if it is a theorem of the given axiomatic system.
Quantification within tense logic introduces issues in no manner confronted on the sentential level. Recognition is made that quantification over objects existing prior to the time of assertion is to be distinguished from quantification over objects existing at the time of assertion, both of which in turn are to be distinguished from quantifying over objects existing at the time of assertion. Such distinct kinds of quantification are readily distinguishable within tense logic by means of incorporation of what is here called the logic of actual and possible objects. Precise semantical and syntactical formalization of this double quantification is presented prior to its use within tense logic, and completeness theorems are given for both the full system. and the restricted logic of actual objects, the latter of which may separately be taken as a formalization of a logic which can accommodate denotationless names. These several kinds of quantificational logic lead to separate completeness theorems stated and established for tense logic, depending on the several kinds of quantificational bases possible for this logic."

2. Cocchiarella, Nino, Epstein, George, Dunn, J.Michael, and Shapiro, S.C., eds. 1975. *Proceedings of the 1975 International Symposium on Multiple-Valued Logic. Indiana University, Bloomington, Indiana, May 13-16, 1975*. Long Beach: IEEE Computer Society.

3. Cocchiarella, Nino. 1986. *Logical Investigations of Predication Theory and the Problem of Universals*. Napoli: Bibliopolis.

"Beginning with Aristotle's notion of a universal as that which can be predicated of things, I provide in this monograph separate logical analyses of what nominalism, conceptualism and realism take to be the predicable nature of universals. My position throughout is that such an analysis proceeds through the construction of a formal theory of predication on the one hand and a logical semantics on the other. I adopt and apply in this regard the formal and semantical techniques of my former teachers Rudolf Carnap and Richard Montague.
One important way in which I differ from Carnap and Montague, however, is in our respective analyses of so-called "higher order" sentences - that is, sentences in

which nominalized predicates, whether simple or complex, occur as the logico-grammatical subjects of other predicates. In this regard, whereas Carnap and Montague formulate and adopt one or another version of a theory of simple logical types as the framework within which to analyze such sentences, I formulate instead, relative to nominalism, conceptualism and realism, systems which do not require any grammatical type distinctions beyond those already found in standard second order predicate logic. All of the theories of predication formulated in this monograph, in other words, are second order theories, including those which contain a logic of nominalized predicates. Russell's paradox of predication, it turns out, can be resolved without resorting to a theory of types." (From the *Preface* p. 9)

4. ———. 1987. *Logical Studies in Early Analytic Philosophy*. Columbus: Ohio University Press.
Table of Contents: Preface XI-XII; Introduction 1; Chapter 1. The Development of the Theory of Logical Types and the Notion of a Logical Subject in Russell's Early Philosophy 19; Chapter 2. Frege, Russell, and Logicism: A Logical Reconstruction 64; Chapter 3. Meinong Reconstructed versus Early Russell Reconstructed 119; Chapter 4. Frege's Double Correlation Thesis and Quine's Set Theories NF and ML 152; Chapter 5. Russell's Theory of Logical Types and the Atomistic Hierarchy of Sentences 193; Chapter 6. Logical Atomism and Modal Logic 222; Chapter 7. Logical Atomism, Nominalism, and Modal Logic 244; Index 285-293.
"The Essays collected here deal with the development of analytic philosophy in the first quarter of the twentieth century. In addition to providing a historical account of early analytic philosophy, these Essays also contain logical reconstructions of Frege's, Russell's, Meinong's, and Wittgenstein's views during the period in question. Several of these reconstructions can and have been used in the new logico-linguistic developments in pragmatics and intensional logic that make up the vanguard of contemporary analytic philosophy. Others, such as the interpretation of the logical modalities in logical atomism, or the determination of the objects of fiction and dreams in Meinong's theory of objects or Russell's early logic, provide a useful introduction, if not also a solution, to a number of problems confronting analytic philosophy today. Indeed, for that matter, all of the Essays collected here provide a useful propaedeutic to much of the research now going on in the study of logic and language.
A number of small changes have been made in all of the Essays reprinted here, mainly for stylistic purposes. Their histories are briefly indicated as follows. Chapter 1 first appeared in *Synthese*, vol. 45, no. 1 (September I980):71—115, Copyright © 1980 by D. Reidel Publishing Company, Dordrecht, Holland. A somewhat longer version of chapter 2 first appeared in *Frege Synthesized*, L. Haaparanta and J. Hintikka (eds.), 1986, pp. 197-252, Copyright © 1986 by D. Reidel Publishing Company, Dordrecht, Holland. The present version was given as a lecture in a seminar on 13 March 1985, for the Bertrand Russell Editorial Project at McMaster University. Chapters 3 and 4 first appeared in *Journal of Philosophical Logic*, vol. 11, no. 2 (May, 1982): 183-214, and vol. 14, no. 1 (February 1985): 1-39, respectively, Copyright © 1982 by D. Reidei Publishing Company, Dordrecht, Holland. Chapter 3 was originally given as a lecture to the Société Belge de Logique et de Philosophie des Sciences, Brussels, in December 1981. Chapter 4 was my contribution to An Interdisciplinary Conference on Logic, Truth and Type Theory, given in memory of Alfred Tarski, 6-7 April 1984. Chapter 5 first appeared in *Essays in Bertrand Russell's Philosophy*, C. Wade Savage and C. Anthony Anderson (eds.), 1987, Copyright © by University of Minnesota Press, Minneapolis. Chapter 6 first appeared in *Philosophia, Philosophical Quarterly of Israel*, vol. 4, no. 1 (January 1974):41-66. It is reprinted here with the permission of the editor. Chapter 6 was given as a lecture to the Victoria Conference on Formal Ontology at the University of Victoria on 15 October 1972. Chapter 7 first appeared in *Synthese*, vol. 31, no. 1 (June 1975):23-62, Copyright © 1975 by D. Reidel Publishing Company, Dordrecht, Holland. It was originally given as a lecture to the University

of North Carolina Fall Philosophy Colloquium in October 1973." (*Preface*, pp. XI-XII)

5. ———. 2007. *Formal Ontology and Conceptual Realism*. New York: Springer.
Table of Contents: Preface XI; Introduction XIII-XXIII;
I. Formal Ontology.
1. Formal ontology and conceptual realism 3; 2. Time, Being and Existence 25; 3. Logical necessity and logical atomism 59; 4. Formal theories of predication 81; 5. Formal theories of predication part II 101; 6. Intensional possible worlds 121;
II. Conceptual Realism.
7. The nexus of predication 139;
8. Medieval logic and conceptual realism 169; 9. On Geach against general reference 195; 10. Leśniewski's Ontology 215; 11. Plurals and the logic of classes as many 235; 12. The logic of natural kinds 273; Afterword on Truth-Makers 295; Bibliography 297; Index 307-316.
"The history of philosophy is replete with different metaphysical schemes of the ontological structure of the world. These schemes have generally been described in informal, intuitive terms, and the arguments for and against them, including their consistency and adequacy as explanatory frameworks, have generally been given in even more informal terms. The goal of formal ontology is to correct for these deficiencies. By formally reconstructing an intuitive, informal ontological scheme as a formal ontology we can better determine the consistency and adequacy of that scheme; and then by comparing different reconstructed schemes with one another as formal ontologies we can better evaluate the arguments for and against them, and come to a decision as to which system it is best to adopt.
This book is divided into two parts. The first part is on formal ontology and how different informal ontological systems can be formally developed and compared with one another. An abstract set-theoretic framework, which we call comparative formal ontology, can be used for this purpose without assuming that set theory is itself a superseding ontological system. The second part of this book is on the formal construction and defense of a particular ontological scheme called conceptual realism. Conceptual realism is to be preferred to alternative formal ontologies for the reasons briefly described below, and for others as well that are given in more detail in various parts of the book. Conceptual realism, in other words, is put forward here as the best ontological system to adopt." (From the *Introduction*, p. XIII)

6. Cocchiarella, Nino, and Freund, Max A. 2008. *Modal Logic. An Introduction to its Syntax and Semantics*. New York: Oxford University Press.
Table of Contents: 1. Introduction 1; 2. The syntax of modal sentential calculi 15; 3. Matrix semantics 45; 4. Semantics for logical necessity 61; 5. Semantics for S 5 71; 6. Relational world systems 81; 7. Quantified modal logic 119; 8. The semantics of quantified modal logic 153; 9. Second-order modal logic 183; 10. Semantics of second-order modal logic 215; Afterword 253; Bibliography 257; Index 263-268.
"Modal logic is a theoretical field that is important not only in philosophy, where logic in general is commonly studied, but in mathematics, linguistics, and computer and information sciences as well. This book will be useful for students, researchers, and professionals in all of these and related disciplines. The only requirement is some familiarity with first-order logic and elementary set-theory.
The main outline of this book is a development of the logical syntax and semantics of modal logic in three stages of increasing logical complexity. The first stage is a comprehensive development of sentential modal logic, which is followed by a similarly comprehensive development of first-order modal predicate logic. The final stage is a development of second-order modal predicate logic. These stages are introduced gradually, with increasing difficulty at each stage. Most of the important results in modal logic are described and proved in each of their respective stages.
This book is based on a series of lectures given over a number of years at Indiana University by the first author. A draft of the book has also been used by the second author in Costa Rica and Mexico. The book is organized as follows.

We begin in chapter 1 with concatenation theory and the logistic method. By means of this theory and method we describe the construction of expressions, formal languages, and formal systems or calculi. Different modal calculi are then constructed in chapter 2. These cover all of the well-known systems, S1–S5, of Lewis and Langford's 1932 classic *Symbolic Logic*. As already indicated, these systems are constructed first on the level of sentential (or propositional) logic and then later in chapter 7 on the level of first-order predicate logic, where we distinguish the quantified modal logic of actualism from that of possibilism. The systems are then extended yet again to the level of second-order modal predicate logic in chapter 9, where the notion of existence that is central to the actualism-possibilism distinction is given a deeper and finer-grained analysis in terms of existence-entailing concepts, as opposed to concepts that do not entail existence." (From the *Introduction*, p. 1)

Essays translated in Spanish and Italian

1. Cocchiarella, Nino. 2000. *Lógica Como Lenguaje y Lógica Como Cálculo: su Papel en la Teoría de la Atribución*. Heredia, Costa Rica: Departamento de Filosofia, Universidad Nacional.
   Coleccion Prometeo n. 20.
2. ———. 1974. "La Semantica della Logica del Tempo." In *La Logica del Tempo*, edited by Pizzi, Claudio, 318-347. Torino: Boringhieri.
   Italian translation of the third chapter of the unpublished Ph. D. Thesis: *Tense Logic: A Study of Temporal Reference*, (1966).
3. ———. 2009. "Logica e Ontologia." *Aquinas.Rivista Internazionale di Filosofia* no. 52:7-50.
   Italian translation by Flavia Marcacci, revised by Gianfranco Basti of *Logic and Ontology* (2001).

Studies about the work of Nino Cocchiarella

1. Bonevac, Daniel. 1991. "Critical Review of: Nino B. Cocchiarella, *Logical Investigations of Predication Theory and the Problem fo Universals*." *Noûs* no. 25:221-230.
2. Chierchia, Gennaro. 1984. *Topics in the Syntax and Semantics of Infinitives and Gerunds*, University of Massachusetts.
   Unpublished Ph. D. Thesis available at UMI Dissertation Express, reference number 8410273.
3. ———. 1985. "Formal Semantics and the Grammar of Predication." *Linguistic Inquiry* no. 16:417-443.
4. Freund, Max A. 1989. *Formal Investigations of Holistic Realist Ramified Conceptualism*, Indiana University.
   Unpublished Ph. D. Thesis available at UMI Dissertation Express, reference number 9020685.
5. ———. 1991. "Consideraciones logico-epistemicas relativa a una forma de conceptualismo ramificado." *Critica* no. XXIII (69):47-72.
   "An intuitive interpretation of constructive knowability is first developed. Then, an epistemic second order logical system (which formalizes logical aspects of the interpretation) is constructed. A proof of the relative consistency of such a system is

offered. Next, a formal system of intensional arithmetic (whose logical basis is the aforementioned second order system) is stated. It is proved that such a formal system of intensional arithmetic entails a theorem, whose content would show possible limitations to constructive knowability."

6. ———. 1992. "Un sistema logico de segundo orden conceptualista con operadores lambda ramificados." *Critica* no. XXIV (72):3-25.
"We develop a second order logical system with ramified lambda operators, having ramified conceptualism as its philosophical background. Such a system is shown to relatively consistent. Finally, we construct a non-standard second order semantics and prove a completeness theorem with respect to a notion of validity, provided by the semantics, and certain extensions of the second order system."
7. ———. 1994. "The Relative Consistency of System RRC* and Some of Its Extensions." *Studia Logica* no. 53:351-360.
8. ———. 1996. "A Minimal Logical System for the Computable Concepts and Effective Knowability." *Logique et Analyse* no. 37:339-366.
9. ———. 1996. "Semantics for Two Second-Order Logical Systems: =RRC* and Cocchiarella's RRC*." *Notre Dame Journal of Formal Logic* no. 37:483-505.
10. ———. 1996. "A Minimal Logical System for the Computable Concepts and Effective Knowability - Some Corrections." *Logique et Analyse* no. 37:411-412.
11. ———. 2000. "A Complete and Consistent Formal System for Sortals." *Studia Logica* no. 65:1-15.
12. ———. 2001. "A Temporal Logic for Sortals." *Studia Logica* no. 69:351-380.
13. Landini, Gregory. 1986. *Meinong Reconstructed Versus Early Russell Reconstructed: A Study in the Formal Ontology of Fiction*, Indiana University. Unpublished Ph. D. Thesis available at UMI Dissertation Express, reference number 8617784.
14. ———. 1990. "How to Russell another Meinongian: a Russellian theory of fictional objects versus Zalta's theory of abstract objects." *Grazer Philosophische Studien* no. 37:93-122.
15. ———. 1998. *Russell's Hidden Substitutional Theory*. New York: Oxford University Press.
16. ———. 2009. "Cocchiarella's Formal Ontology and the paradoxes of hyperintensionality." *Axiomathes.An International Journal in Ontology and Cognitive Systems* no. 19:115-142.
17. Meyer, Robert K. 1972. "Identity in Cocchiarella's T*." *Noûs* no. 6:189-197.
18. Orilia, Francesco. 1996. "A Contingent Russell's Paradox." *Notre Dame Journal of Formal Logic* no. 37:105-111.
19. Park, Woosuk. 1990. "Scotus, Frege, and Bergmann." *The Modern Schoolman* no. 67:259-273.
20. ———. 2001. "On Cocchiarella's retroactive theory of reference." *The Logica Yearbook 2000*:79-90.
21. ———. 2016. "Where have all the Californian tense-logicians gone?"*Synthese*. To appear in *Synthese*.
"Arthur N. Prior, in the Preface of Past, Present and Future, made clear his indebtedness to “the very lively tense-logicians of California for many discussions”. Strangely,with a notable exception of Copeland (Logic and reality: Essays on the legacy of Arthur Prior, 1996), there is no extensive discussion of these scholars (as a group, if not a school) in the literature on the history of tense logic. In this paper, I propose to study how Nino B. Cocchiarella, as one of the Californian tense-logicians, interacted with Prior in the late 1960s. By gathering clues from their correspondence available at Virtual Lab for Prior Studies, I will highlight some of

the differences between their views on tense-logic, which might still have far-reaching philosophical implications. I will conclude with a sketchof how to study in what ways Prior and Cocchiarella influenced some other Californian tense-logicians."

22. Prior, Arthur Norman. 1967. *Past, Present and Future*. New York: Oxford University Press.
Various references to the unpublished Ph.D. thesis by Nino Cocchiarerlla.

23. Simms, John Carson. 1980. "A realist semantics for Cocchiarella's T*." *Notre Dame Journal of Formal Logic* no. 21:1-32.

24. Turner, Raymond. 1985. "Three theories of nominalized predicates." *Studia Logica* no. 44:165-186.

25. Vasylchenko, Andriy. 2009. "The problem of reference to nonexistents in Cocchiarella's Conceptual Realism." *Axiomathes.An International Journal in Ontology and Cognitive Systems* no. 29:155-166.
"This article is a critical review of Cocchiarella's theory of reference. In conceptual realism, there are two central distinctions regarding reference: first, between active and deactivated use of referential expressions, and, second, between using referential expressions with and without existential presupposition. Cocchiarella's normative restrictions on the existential presuppositions of reference lead to postulating two fundamentally different kinds of objects in conceptual realism: realia or concrete objects, on the one hand, and abstract intensional objects or nonexistents, on the other. According to Cocchiarella, nonexistents can be referred to only without existential presuppositions. However, referring to nonexistents with existential presuppositions is an ordinary human practice. To account for this fact, Cocchiarella's normative theory of reference should be supplemented by a descriptive account of referring."

26. Yu, Yung-Ping. 1995. *Generality and Reference. An Examination of Denoting in Russell's Principles of Mathematics*, University of Iowa.
Unpublished Ph. D. Thesis available at UMI Dissertation Express, reference number 9603108.

27. Zacker, David J. 1996. *A Study in the Temporal Ontology of Tense Logic*, Michigan State University.
Unpublished Ph. D. Thesis available at UMI Dissertation Express, reference number 9631366.

Pages in PDF format

I am grateful to Professor Nino Cocchiarella, Dr. Woosuk Park (editor of the Korean Journal of Logic) and to Professor Inkyo Chung, President of Korean Association of Logic for the permission to publish the essay *Logical necessity based on Carnap's criterion of adequacy*.

The following papers are posted with the kind permission of Professor Nino Cocchiarella:

- "Conceptual Realism as Formal Ontology" Roberto Poli, Peter Simons (eds.), *Formal Ontology*, Dordrecht/Boston/London, Kluwer 1996, pp. 27-60, Nijhoff International Philosophy Series, vol. 53. (256 KB). This essay is reproduced with the kind authorization of Kluwer Academic Publishers.
- "Logic and Ontology", in: *Axiomathes* vol. 12, (2001) pp. 117-150 (Italian translation by Flavia Marcacci, revised by Gianfranco Basti: "Logica e ontologia", *Aquinas.Rivista Internazionale di Filosofia* 52: 7-50 (2009).

- "Logical Necessity Based on Carnap's Criterion of Adequacy", *Korean Journal of Logic*, vol. 5 n. 2 (2002), pp. 1-21.
- "Conceptual Realism and the Nexus of Predication", *Metalogicon* vol. 16, 2 (2003), pp. 45-70.
- "Denoting Concepts, Reference, and the Logic of Names, Classes as Many, Groups and Plurals", *Linguistics and Philosophy* vol. 28 n. 2 (2005), pp. 135-179.
- "Russell's Logical Atomism 1914-1918: Epistemological Ontology and Logical Form", unpublished essay (will be removed after publication).
- *Deontic Logic*, unpublished notes based on a course given on modal logic in the late 1960s at the State University of California at San Francisco.
- *Gustav Bergmann on Ideal Languages*, unpublished lecture presented at Indiana University at the *Gustav Bergmann Memorial Conference (October 30-21, 1992)*.
- A Modal-Ontological Argument and Leibniz's View of Possible Worlds, unpublished paper (2018)
- Can an AI System Think? Functionalism and the Nature of Mentality, unpublished paper (2019)
- *Some Remarks on Stoic Logic*
- *Diodorus's Master Argument*

The last two papers were written at request of Professor Giuseppe Addona, of the Liceo ginnasio of Benevento (Italy) for his Italian students and can also be found (with an Italian translation) on his Website.

The Essays published in the *Notre Dame Journal Formal Logic* are available at Project Euclid; some of other Essays are available at Jstor or at Academia.edu.