

Congreso Internacional

DÍA MUNDIAL DE LA LÓGICA

Inceptiones et Receptiones 2022: Tras el rastro de la lógica, la razón y las matemáticas

- Luis Bartolo – La significancia de los enfoques etno-históricos para la teoría de la razón **LUNES 10/01**
9:00 - 13:00
- Ivahn Smadja – Humboldt and the mathematicians: History of mathematics without teleology
- Caleb Everett – Numbers are a cognitively transformative product of cultural evolution **MARTES 11/01**
9:00 - 13:00
- Val Dusek – Existence of non-calculative mathematics in ethnomathematics
- Teodor-Tiberiu Călinoiu, Daniele Garancini y Lok Hang Yuen – Experimental philosophical logic and unrestricted human reasoning
- Karine Chemla – A historical approach to formal practices in mathematics and some consequences: Views from numerical notations in the far East **MIÉRCOLES 12/01**
9:00 - 13:00
- Sandra Visokolskis – A Origin of imminent deduction in Mesopotamian and Egyptian antecedents of the (Greek?) notion of apagogé
- Ellen Lehet – The evolution of the group concept
- Graham Priest – The Catuskoṭi, the Saptabhaṅgi, and ‘Non-Classical’ Logic **JUEVES 13/01**
9:00 - 13:00
- Alberto Bardi – Proclus, Copernicus, and the difference between postulates and axioms from Greek Antiquity to European Humanism
- Benjamin Wilck – Was Euclid a Platonist philosopher? Text-based approaches to interpreting Greek mathematics
- Alejandro Secades – El estudio del razonamiento y la cognición en otras culturas y lenguas: cuestiones metodológicas y prácticas **VIERNES 14/01**
9:00 - 13:00
- Eduardo Fajardo – La defensa histórica de la interpretación existencial
- José Alejandro Fernández Cuesta – Historia, implicaciones filosóficas y límites de las lógicas cuánticas
- Manuel Medrano – Quipus: aproximaciones al corpus **VIERNES 14/01**
14:00 - 16:00
- Itala M. Loffredo D’Ottaviano – The ex falso sequitur quodlibet and the paraconsistent perspective in Western thought **SÁBADO 15/01**
9:00 - 13:00
- Evandro Luís Gomes – Pseudo-Scotus and the history of the ex falso

Día Mundial de la Lógica / Inceptiones et Receptiones 2022: Tras el rastro de la lógica, la razón y las matemáticas se realizará entre el 10 y el 15 de enero de 2022 vía Google Meet.

Evento organizado por la Maestría en Filosofía con mención en Epistemología y el Vicedecanato de Investigación y Posgrado de la Facultad de Letras de la UNMSM, y por el Centre Atlantique de Philosophie (CAPHI) de la Nantes Université, con el apoyo de la Sociedad de Epistemología y Lógica (SEPLO, Perú).

Folleto diseñado por Luis Felipe Bartolo Alegre con la clase `conferencebooklet` de \LaTeX .

World Logic Day / Inceptiones et Receptiones 2022: On the Trace of Logic, Reason, and Math will take place between 10-15 January 2022 via Google Meet.

Event organised by the Master's programme in Philosophy with mention in Epistemology and the Vice-Deanship of Research and Postgraduate Studies of UNMSM's Faculty of Arts, and by the Centre Atlantique de Philosophie (CAPHI) of the Nantes Université, with the support of the Society for Epistemology and Logic (SEPLO, Peru).

Booklet designed by Luis Felipe Bartolo Alegre with the \LaTeX class `conferencebooklet`.

Permalink: <https://a.seplo.org/dml/2022/libro.pdf>

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Acerca del evento

Paco Miró Quesada se preguntó una vez si la multiplicidad de lógicas no clásicas ponía en peligro la existencia misma de la 'razón', entendida como la facultad por la que podemos pensar lógicamente. Si hay varias —y a menudo incompatibles— concepciones de la lógica, significa que hay varias formas de ser lógico y, por tanto, que hay más de una razón o racionalidad. Pero si este fuera el caso, Miró Quesada dice que la razón puede ser arbitraria o relativa, lo que estaría muy en contra de lo que él espera que sea. El problema entonces es si hay algunos rasgos que son comunes a todas las concepciones propias de la lógica y la razón o si por el contrario tenemos que aceptar que la lógica y la razón son un poco arbitrarias o relativas, como lo son hasta cierto punto la cultura y el lenguaje; sobre todo cuando se estudian de forma comparativa e histórica.

En este último caso, el estudio de la evolución y variación cultural de los conceptos, términos y concepciones de la lógica, la razón y las matemáticas puede arrojar luz sobre el propio problema de la naturaleza de la razón. Pero incluso si prescindimos de ellos como fuentes de conocimiento lógico y matemático propiamente dichos, su estudio podría ayudarnos a comprender la naturaleza del razonamiento humano. Este evento presentará enfoques etnológicos, históricos, filológicos y similares a los conceptos y las concepciones relacionadas con la lógica, la teoría de la razón o racionalidad y las matemáticas.

About the event

Paco Miró Quesada asked once whether the multiplicity of non-classical logics endangered the very existence of 'reason', understood as the faculty whereby we can think logically. If there are several—and often mutually incompatible—conceptions of logic, then it means that there are several ways to be logical, and hence that there is more than one reason or rationality. But if this was the case, Miró Quesada says that reason may be arbitrary or relative, which would be very much against what he expects it to be. The problem then becomes whether there are some traits that are common to all proper conceptions of logic and reason or if instead we have to accept that logic and reason are a bit arbitrary or relative, like culture and language are to some extent; especially when studied in a comparative and historical fashion.

In the latter case, the study of the evolution and cultural variation of the concepts, terms, and conceptions of logic, reason, and mathematics may shed light into the very problem of the nature of reason. But even if we disregard these as sources of proper logical and mathematical knowledge, their study could still help us understand the nature of human reasoning. This event will present ethnological, historical, philological, and similar approaches to the concepts and conceptions related to logic, the theory of reason or rationality, and mathematic.

Referencia — Reference

Fr. Miró Quesada Cantuarias. Las lógicas heterodoxas y el problema de la unidad de la Lógica. *Lógica: Aspectos formales y filosóficos* (D. Rosales, Ed.). PUCP, 1978.

Día Mundial de la Lógica

La proclamación del *Día Mundial de la Lógica* (14 de enero) por la **UNESCO**, en asociación con el **Consejo Internacional de Filosofía y Estudios Humanísticos**, tiene por objetivo llamar la atención sobre la historia intelectual, el significado conceptual y las repercusiones prácticas de la lógica entre las comunidades científicas interdisciplinarias y el público en general. Con este objeto organizamos *Tras el rastro de la lógica, la razón y las matemáticas*, nuestro segundo evento por el *Día Mundial de la Lógica*, que será celebrado entre el 10 y 15 de enero de 2022.



Conseil International de la
Philosophie et des Sciences Humaines

World Logic Day

*The proclamation of the World Logic Day (January 14) by UNESCO, in association with the **International Council for Philosophy and Human Sciences**, aims to draw attention to the intellectual history, conceptual meaning and practical implications of logic among inter-disciplinary scientific communities and the general public. To this end, we are organising On the Trace of Logic, Reason, and Math, our second World Logic Day event, to be celebrated between 10–15 January 2022.*



Sesiones y resúmenes

Sessions and abstracts

C Conferencia — *Keynote lecture*

E Presentación especial — *Special presentation*

P Ponencia — *Contributed talk*

1. Introducción — *Introduction*

Lunes 10 — *Monday 10*

9:00–12:00 (PE) / 14:00–17:00 (GMT)

La significancia de los enfoques etno-históricos para la teoría de la razón ***The significance of ethno-historical approaches to the theory of reason***

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En esta introducción discutiré brevemente la importancia de los enfoques etnológicos e históricos para la construcción de una teoría de la razón, especialmente en relación con el debate/diálogo entre Paco Miró Quesada y Newton da Costa sobre la historicidad de la lógica y la razón [1, 2] y las contribuciones que se presentarán en el evento. Mientras que Miró Quesada defiende que la razón y la lógica son absolutas y que la historia sólo muestra el proceso por el que vamos conociendo sus principios, da Costa propone que esos principios dependen en gran medida de factores pragmáticos. Argumentaré que los enfoques etnológico e histórico son cruciales para tratar de resolver este debate, ya que cada uno de estos puntos de vista sugiere diferentes hipótesis empíricas en el estudio etnológico e histórico de la razón, la lógica y las matemáticas. Si Miró Quesada tiene razón, entonces cualquier cambio histórico en el núcleo de los principios de la razón y la lógica asumidos por una determinada cultura o bien debe acercarse a este núcleo absoluto o bien representaría un caso de regresión racional/lógica. Ahora bien, si da Costa tiene razón, entonces no tendríamos ninguna razón para esperar ninguna tendencia general a la convergencia en los principios lógicos de varias culturas a través del tiempo. Sin embargo, habría que encontrar tendencias respecto a cómo se desarrollaría este núcleo en entornos de características similares. El congreso 'Tras la huella de la lógica, la razón y las matemáticas' está motivado por este tipo de cuestiones, aunque obviamente no esperamos resolverlas aquí en ninguna medida. De hecho, algunas de las ponencias que siguen no se refieren ni siquiera indirectamente a estas cuestiones, pero creo que todas ellas pueden proporcionarnos valiosas aportaciones para dar pequeños pasos en nuestro camino hacia su comprensión.

This introduction will briefly discuss the significance of ethnological and historical approaches to the construction of a theory of reason, especially in relation to the debate/dialogue between Paco Miró Quesada and Newton da Costa on the universality or historicity of logic and reason [1, 2] and the contributions to be presented at the event. Whereas Miró Quesada argues that reason and logic are universal and that history only shows the process whereby we gradually become aware of their principles, da Costa proposes that those principles largely depend on pragmatic conveniences. I will argue that ethnological and historical approaches are crucial for trying to settle this debate, since each of these views suggest different empirical hypotheses in the ethnological and historical study of reason, logic and math. If Miró Quesada is right, then any historical change in the nucleus of principles of reason and logic assumed by a given culture either must get closer to this absolute nucleus or would represent an instance of rational/logical regress. Now if da Costa is right, then we would have no reason to expect any general tendency to convergence in the logical principles of various cultures through time. However, tendencies would have to be found with respect to how this nucleus would develop in environments of similar characteristics. The congress 'On the Trace of Logic, Reason, and Math' is motivated by these kinds of questions, although we obviously do not expect to settle them here to any extent. In fact, some of the talks that follow are not even indirectly concerned with these issues, but I believe all of them can provide us with valuable inputs to take small steps in our road to understand them.

Referencias — References

- [1] N. da Costa. The philosophy of logic by Francisco Miró Quesada Cantuarias. *SAJL* 6(2), 2020/1992.
[2] Fr. Miró Quesada Cantuarias. La filosofía de la lógica de N. C. A. da Costa. *Crítica* 14(42), 1982.

Luis Felipe es bachiller en ciencias sociales y tiene estudios de maestría en epistemología por la Universidad Nacional Mayor de San Marcos. Su investigación actual se ocupa del estatus lógico de la ciencia defectuosa (especialmente, inconsistente). Su tesis de maestría se titula *La contrastación de teorías inconsistentes no triviales*, defendida en 2020 y aprobada con la máxima nota. Entre sus artículos publicados están 'Über Poppers Forderung nach Widerspruchlosigkeit' ('Sobre el requisito de consistencia de Popper', *Felsefe Arkivi*, 2019), 'On classical set-compatibility' ('Sobre compatibilidad conjuntista clásica', en Fernandes & Lopez-Orellana, eds., *El jardín de Senderos que se bifurcan y confluyen*, UV, 2020) y 'Argumentos contra la persona y conflictos de intereses' (en Arroyo, Vásquez Dávila & Rodríguez, eds., *VI Jornadas de Lógica y Argumentación*, UNGS, 2021).

Luis Felipe holds a Bachelor's degree in Social Sciences and has Master's studies of Epistemology from the Universidad Nacional Mayor de San Marcos. His current research deals with the logical status of defective (especially inconsistent) science, with a Master's thesis entitled *La contrastación de teorías inconsistentes no triviales* (Testing inconsistent non-trivial theories), which was defended in 2020 and passed with the highest mark. His published articles include 'Über Poppers Forderung nach Widerspruchlosigkeit' ('On Popper's consistency requirement', *Felsefe Arkivi*, 2019), 'On classical set-compatibility' (in Fernandes & Lopez-Orellana, eds., *El jardín de Senderos que se bifurcan y confluyen*, UV, 2020) and 'Argumentos contra la persona y conflictos de intereses' ('Arguments against the person and conflicts of interest', in Arroyo, Vásquez Dávila & Rodríguez, eds., *VI Jornadas de Lógica y Argumentación*, UNGS, 2021).

Humboldt and the mathematicians: History of mathematics without teleology

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By the mid 1840s, as he was writing the second volume of his monumental opus *Kosmos*, Alexander von Humboldt engaged in correspondence with the mathematicians C. G. J. Jacobi and P. G. Lejeune-Dirichlet. He sent them a series of well-researched scholarly questions, asking them to characterize the differences between the various traditions of ancient mathematics, Western and non-Western, so as to assess their respective contributions to mathematics. Since the publication in the 1810s of the work of the British Indologists E. Strachey and H. Th. Colebrooke, ancient mathematical texts translated from Sanskrit became available to European readers. In the following decades, these non-Western sources were widely read and debated on the Continent. Not only these sources shaped G. Libri's and M. Chasles' distinctive views of the history of mathematics, but Colebrooke's scholarship also elicited new work that extended the scope of the *comparanda*. Fr. Rosen translated and edited the manuscript of Al-Khwarizmi's algebra at the Bodleian Library, which Colebrooke had pointed out to him. G. H. F. Nesselmann, trained in both mathematics and Oriental languages, was spurred to investigate what he called 'Greek algebra', thus distinguishing a variety of forms or stages of what he conceived as one mathematical discipline. In his exchanges with Jacobi and Dirichlet, Humboldt aimed at gathering, combining, and integrating expert scholarship so that a synoptic picture may emerge from these various sources of knowledge. By focusing on Humboldt's approach to historiography in the making, I will show how he consistently pursued a line of inquiry rooted in a life-long scientific practice, both instrumented and immune to teleology, which he extended over the years from geognosy to cultural history and history of mathematics.

Ivahn is professor of history and philosophy of science at the Philosophy Department of the Université de Nantes and an associate member of the research team SPHère/CNRS from the Université de Paris. His current research project focuses on the historiography of ancient (Western and non-Western) mathematics in the 19th century, with publications including 'Sanskrit versus Greek "Proofs": History of Mathematics at the Crossroads of Philology and Mathematics in Nineteenth-Century Germany' (*Revue d'Histoire des Mathématiques*, 2015), 'On two conjectures that shaped the historiography of indeterminate analysis: Strachey and Chasles on Sanskrit sources' (*Historia Mathematica*, 2016), and more recently 'Mathematics in the Archives: Deconstructive historiography and the shaping of modern geometry (1837-1852)' (*British Journal for the History of Science*, 2021) and 'The Ancients and the Moderns: Chasles on Euclid's Lost Porisms and the Pursuit of Geometry' (with Nicolas Michel, *Science in Context*, 2021).

2. Enfoques etnopsicológicos — *Ethno-psychological approaches*

Martes 11 — Tuesday 11

9:00–13:00 (PE) / 14:00–18:00 (GMT)

Numbers are a cognitively transformative product of cultural evolution

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While all human populations possess a capacity for precisely discriminating quantities, a growing body of research suggests this capacity is almost completely contingent on culturally variable ‘cognitive technologies’. These technologies include, most notably, number words that vary in substantive ways across languages. Contra some common assumptions, the ability to exactly differentiate most quantities depends on such cognitive technologies. It is neither provided at birth nor does it progress ontogenetically in a uniform fashion across human populations. In this talk I focus on data obtained among three indigenous South American cultures, data that offer evidence in support of the conclusion that culturally dependent cognitive technologies enable, rather than stem from, some putatively basic quantity discrimination skills. Data from these and other populations suggest that number systems and associated quantity-discrimination strategies develop gradually and in culturally contingent ways, though the empowering cognitive technologies in question are typically historically derived, in one way or another, from words for fingers, hands and other body parts. In many though not all cultures, digital patterns were transformed into cognitive technologies via symbolic praxis. Furthermore, I offer evidence from a recent study of thousands of languages [1] suggesting that even basic aspects of language like grammatical number, once thought to be the result of a native ‘number sense’, are better considered culturally contingent tools that are only tangentially related to native cerebral architecture. In sum, the findings discussed support the increasingly popular notion that numerical technologies are a cognitively transformative product of processes that evolve in culturally contingent ways.

Reference

[1] C. Everett. Is native quantitative thought concretized in linguistically privileged ways? A look at the global picture. *Cognitive Neuropsychology* 37(5-6), 2019.

Caleb is Professor of anthropology and Professor of psychology (secondary) at the University of Miami, where he is also Senior Associate Dean of Academic Affairs. While his PhD is in linguistics (Rice University), his research is cross-disciplinary, relying on fieldwork in Amazonia, experimental methods, and quantitative/computational analyses of large datasets. Caleb has published as first author in a variety of journals across disciplines, including *PNAS*, *Philosophical Transactions of the Royal Society*, *Cognitive Science*, *Scientific Reports*, and *Language*. He is the author of two books, with a third book currently in progress. Many of the ideas in his lecture are taken from his 2017 book, *Numbers and the Making of Us: Counting and the Course of Human Cultures* (HUP, 2017), which received a PROSE award and has been translated into seven languages.

A philosophical defense of implicit ethnomathematics

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Parts of ethnomathematics produced by non-literate cultures in the form of tiled walls, basket and rug weaving, board games, etc. is denied to be actual mathematics by many mathematicians. Tiling patterns and games obviously can be described in terms of explicit mathematical definition, but doubts are raised whether their makers or users are actually *doing* mathematics. I argue that they are doing math. Although philosophies of mathematics of the early twentieth century would deny these patterns or activities are real mathematics, other philosophies (especially recent ones) oppose the earlier schools and support the claim that these artifacts and activities are genuine, although implicit, mathematics. Logicism and formalism would deny that artifacts and activities of implicit ethnomathematics are mathematics. For logicism, mathematics is logic. Explicit logical thinking is essential to mathematics. For formalism, mathematics is an activity with meaningless marks and with explicit rules. Intuitionism links mathematics to thinking, not symbolization, but treats math as pure thought, not external action. However, several other philosophies and accounts shift the understanding of mathematics. Post-positivist philosophy of science claims perception is theory-laden. One might also say that theory can be perceptual. Phenomenology describes the lived body as neither pure mind nor mechanical body. Implicit ethnomathematical activity is bodily thought. Mark Johnson and Lakoff and Rotman has emphasized the body in thought and gesture as thought. Notation focus of formalism and the mentalism of Brouwer have been liberalized by Paul Lorenzen's account of mathematics as constructive but not purely mental. The mind/body and theory/practice opposition have been rejected by pragmatists and Marxists among others schools. Lakatos has replaced the purely formal deductive account with a heuristic one. With mathematics as an embodied and constructive practice, the non-formalized and non-verbalized artifacts of ethnomathematics can be recognized as genuine mathematics.

References

- [1] N. R. Hanson. *Patterns of Discovery*. CUP, 1958.
- [2] I. Lakatos. *Proofs and Refutations*. CUP, 1976.
- [3] P. Lorenzen. *Constructive Philosophy*. U. of Massachusetts Press, 1987.
- [4] M. Merleau-Ponty. *The Phenomenology of Perception*. Routledge, 1962.
- [5] M. Polanyi. *Personal Knowledge*. U. of Chicago Press, 1958.

Val is Professor Emeritus of Philosophy at the University of New Hampshire. He has written in areas of philosophy and history of science, particularly philosophy of biology, philosophy of physics, and social epistemology. He has written articles on Imre Lakatos heuristics of mathematics, and Charles S. Peirce's philosophy of topology and of geology. He has also written on Steve Fuller's social epistemology as well as on the role of Chinese philosophy, renaissance occultism, and German romanticism in the background of the physical theory of magnetism.

Experimental philosophical logic and unrestricted human reasoning

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Analytic philosophers have long studied and used logical tools to model human reasoning in its restricted application to certain domains of phenomena, or as engaging with certain concepts of direct philosophical interest. However, in the last century philosophy dedicated virtually no attention to the study of human reasoning, that is, human reasoning as actually performed and discernible when abstracting away from context and isolating away all a-rational disruptive factors. We argue that the question of unrestricted human reasoning is an interesting albeit currently neglected philosophical topic, and that it can and should be tackled experimentally as part of the positive program of experimental philosophy. In particular, we show that this question requires the kind of empirical testing of hypotheses against phenomena which is performed within the positive program. We outline an experimental design that starts addressing this question in the last section. Such an investigation has its place within the boundaries of philosophy due to its intimate connections with topics in philosophical logic. Furthermore, human reasoning should probably play a central role in ongoing debates within the philosophy of logic, such as the debate between monists and pluralists. This investigation should aim to complement ongoing research in the field of the psychology of reasoning, bringing those results back to the philosophical table.

Teodor obtained a BA in theoretical philosophy from the Universitatea din București, followed by a merit scholarship MA in history and philosophy of science at the same institution. After a stay abroad to follow the courses of the MA in analytic philosophy at the Universitat de Barcelona, Teodor completed his MSc in Logic at the Institute for Logic, Language, and Computation (ILLC) of the Universiteit van Amsterdam. He is now doing a PhD of philosophy at Lingnan University in Hong Kong. His main research interests are currently in the philosophy of mathematics and the philosophy of science, with a focus on structuralism and the related topics.

Daniele obtained a bachelor in history of philosophy at the Università degli Studi di Milano. Then, he took a master in analytic philosophy at Universitat de Barcelona, working as a writer of math exercise books, and a master of arts in philosophy at the Università della Svizzera italiana, supported by scholarships from the university and the Fidiam foundation. In Switzerland, Daniele also worked as an assistant for Kevin Mulligan and TAd a logic course. Now he is doing a PhD at Lingnan University, supported by the RGs scholarship. His research recently led him to Oxford University, working on metaphilosophy under the supervision of Timothy Williamson.

Lok obtained his master of philosophy degree at Lingnan University, focusing on the problem of multiple realization. To keep his sanity, he has no plan to do a PhD in the near future. Meanwhile, he is now involved in various explorative projects both inside and outside philosophy, individually and collectively.

3. Historia — History (1)

Miércoles 12 — Wednesday 12

9:00–13:00 (PE) / 14:00–18:00 (GMT)

A historical approach to formal practices in mathematics and some consequences: Views from numerical notations in the far East

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In historical treatments of numbers, numerical notations are systematically treated as attached to ‘cultures’ and ‘civilizations’. However, when we think about the history of sexagesimal place-value and decimal place-value numeration systems, we see clearly that these inscriptions circulated widely, more or less like mathematical formulas that we use today. This talk will discuss some of the tacit assumptions with which most histories of numbers were written, showing how these assumptions led to consider the cultural attachment of numerical signs as an inevitable conclusion. I will then highlight how ancient actors’ actual practices with place-value numerical notations expose the fallacies of these assumptions. This will lead me to discuss how formal practices with inscriptions took shape and were shared across linguistic boundaries in the ancient world, but within quite limited collectives of specialists, while at the same time, other collectives computed differently. In my view, a conclusion of this kind suggests that we should rethink the history of mathematical symbolism in a radical way. This might have interesting consequences for how we discuss the ‘diversity of mathematical cultures’ when we teach algebra.

Karine is a Senior Researcher (exceptional class) at the CNRS of the Université de Paris. Her current work focuses, from a historical-anthropological viewpoint, on the relationship between mathematics and the various cultures in the context of which it is practiced. Chemla co-edited with E. Fox Keller the book *Cultures without culturalism: The making of scientific knowledge* (DUP, 2017), and with C. Michel *Mathematics, administrative and economic activities in ancient worlds* (Springer, 2020). There is a forthcoming book she is co-editing with Agathe Keller and Christine Proust, which deals with *Cultures of computation and quantification in the ancient world. Numbers, measurements, and operations in documents from Mesopotamia, China and South Asia* (Springer, 2022). She also published articles like ‘Abstraction as a value in the historiography of mathematics in ancient Greece and China. A historical approach to comparative history of mathematics’ (with Qiaosheng Dong, in Lloyd & Zhao, eds., *Ancient Greece and China compared*, CUP, 2018) and ‘Writing abstractly in mathematical texts from early imperial China’ (in M. Csikszentmihalyi and M. Nylan, eds., *Technical arts in the Han histories*, SUNY, 2021). Chemla was awarded in 2020 the Otto Neugebauer Prize by the European Mathematical Society, and in 2021 the Hirst Prize by the London Mathematical Society and British Society for the History of Mathematics.

Origin of imminent deduction in Mesopotamian and Egyptian antecedents of the (Greek?) notion of *apagogé*

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This presentation puts forward a hypothesis regarding the deductivist characterisation made by ancient Greek mathematicians and philosophers in their results obtained in both mathematics and logic, on a variety of modalities of proof [1], that were carried out in the preceding Mesopotamian and ancient Egyptian mathematical cultures. We postulate that the distinction between (a) the proof of correctness of algorithms carried out in ancient Near East and (b) the abstract notions of conclusive proof in ancient Greek culture, has a supposed common root in the notion of ‘reduction’ that Hellenic and Hellenistic mathematics characterised around the term ‘*apagogé*’. Although the Mesopotamian and Egyptian mathematical cultures apparently did not enter into deductive developments, they have a history of proving the correctness of the methods they used to confirm mathematical results [1, p. 59]. Our approach seeks to answer, at least partially, the open that Karine Chemla wields, namely: ‘How far these tools of analysis [proofs of correctness of algorithms from ancient civilizations previous to Greek culture] allow historians to examine anew other proofs, for instance proofs written in Greek?’ [1, p. 60] Our approach would result, among other things, in the ancient notion of *apagogé* would not have a unique Greek origin, but, beyond its Greek name, has interesting antecedents in previous cultures. This leads us to critically review discussions by authors such as Chemla [1], Høyrup [3], Knorr [4], Szabó [5], as well as Catarina Dutilh Novaes’s [2] recent work, as well as the philosophical-methodological aspects of Charles Sanders Peirce around the more contemporary versions that were inherited from his works related to the notion of abduction, due to its correlates with the old concept of *apagogé*.

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- [5] Á. Szabó. *The beginnings of Greek mathematics*. Reidel, 1978/1969.

Sandra holds a degree in mathematics and a PhD in philosophy from the Universidad Nacional de Córdoba, with a master’s degree and specialisation in higher education. She currently teaches Philosophy of Mathematics and History and Foundations of Mathematics at the Faculty of Philosophy of the Universidad Nacional de Córdoba and the Universidad Nacional de Villa María, in Argentina. She is also in charge of two research projects on creativity and visualisation in mathematics, directing doctoral students in creativity and the history and philosophy of mathematics. The focus of his research is on the history and philosophy of non-deductive reasoning in mathematics and its creative processes.

The evolution of the group concept

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Commentator: José Alejandro Fernández Cuesta

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In this talk, I will consider four different ways of conceptualizing groups: (1) in terms of transformations, symmetries, and rotations; (2) in terms of the standard axiomatic definition; (3) as groupoids; and (4) as group objects within a category. By considering these four characterizations of the group concept, we will be able to see how mathematical methods have transformed into what they are today. In particular, we see how abstract, structural methods have become increasingly integral to the practice of mathematics. The discussion of this evolution and of the different perspectives on the concept of group will have two aims. The first aim is to highlight the epistemic value of structural methods within contemporary mathematics. The category theoretic perspective on groups in terms of groupoids and group objects introduces a level of structural abstractness that has proven to be advantageous in a variety of mathematical areas. For instance, the use of groupoids within algebraic topology has allowed for new approaches to and perspectives on theorems and proofs that are central to the field (e.g. the van Kampen theorem). Accordingly, this talk will aim to characterize the epistemic value of these structural methods. The second aim will be to bring to light some important features of mathematical progress. In particular, these new conceptualizations of the group concept are instances of mathematical progress and an understanding of what each of these conceptualizations contribute to the study of mathematics helps us to develop a complete understanding of the nature of mathematical progress. More specifically, the ways that each of these conceptualizations contribute to our mathematical understanding of the group concept indicate the significance of understanding for mathematical practice and progress. Overall, this discussion will shed light on the epistemic value of structural reasoning as well as illustrate the significance of this epistemic value for the progress of mathematics.

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Ellen has recently completed her Ph.D. at the University of Notre Dame, where she focused on philosophy of mathematical practice with particular interest in the topics of explanation, understanding, and contemporary mathematics. She is currently an Assistant Professor in the Developmental Mathematics Department at Utah Valley University, where she continues to conduct research on mathematical explanation in contemporary mathematics and has the opportunity to apply her philosophical views of explanation and understanding in the classroom.

4. Historia — History (2)

Jueves 13 — Thursday 13

9:00–13:00 (PE) / 14:00–18:00 (GMT)

The *catuṣkoṭi*, the *saptabhāṅgi*, and ‘non-classical’ logic

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Commentator: Diego Arana Segura

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The Principles of Excluded Middle and Non-Contradiction are highly orthodox in Western philosophy. They are much less so in Indian philosophy. Indeed there are logical/metaphysical positions that clearly violate them. One of these is the Buddhist *catuṣkoṭi*; another is the Jain *saptabhāṅgi*. Contemporary Western logicians have, however, investigated systems of ‘non-classical’ logic in which these principles fail, and some of these bear important relationships to the *catuṣkoṭi* and the *saptabhāṅgi*. In this talk, we will look at these two principles, and see how these may inform and be informed by those systems.

Graham is currently Distinguished Professor of Philosophy at the Graduate Center, City University of New York, Boyce Gibson Professor Emeritus at the University of Melbourne, and International Research Fellow at the Ruhr-Universität Bochum. He is known for his work on non-classical logic, particularly in connection with dialetheism, on metaphysics, on the history of philosophy, and on Buddhist philosophy. He has published over 300 papers in nearly every major logic and philosophy journal. His books include: *In contradiction* (OUP, 1987), *Beyond the limits of thought* (CUP, 2002), *Introduction to non-classical logic* (CUP, 2001), *Towards non-being* (OUP, 2005), *One* (OUP, 2014), *The fifth corner of four* (OUP, 2018), and *Capitalism—its nature and its replacement* (Routledge, 2021). For further details, see: <https://grahampriest.net/>.

Proclus, Copernicus, and the difference between postulates and axioms from Greek Antiquity to European Humanism

Alberto Bardi

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Commentator: Benjamin Wilck

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The difference between postulates and axioms forms part of the debates about the foundations of mathematics and mathematical sciences, a locus where logic and mathematics meet. In the ancient Greek philosophical tradition, the postulate/axiom distinction can be traced back to Geminus (first century BCE), as attested in Proclus' *Commentary on the First Book of Euclid's Elements*. The logical-deductive structure of Euclid's *Elements* is shaped around three main elements: definitions of the subject addressed, postulates, and common notions (or axioms in later literature). According to Geminus-Proclus, the postulates of Euclid's *Elements* can be divided into two groups, reflecting their different nature: constructions are required in postulates 1-3, while postulates 4-5 state properties of particular geometric objects. As for the common notions/axioms, they were generally conceived as assumptions conveying self-evident truths, hence requiring no proofs. Yet, not every author of mathematics assumed principles in the same manner as Euclid did; there was also no homogeneity on the nature of principles. Questions on the difference between postulates and axioms were inherited in subsequent mathematical traditions. Due to translations from Greek into Latin, the terminology related to mathematical principles generated misunderstandings. For instance, regarding the Latin mathematical tradition, an open problem on the postulate/axiom question features in Copernicus' *Draft on the models of celestial motions established by itself*, better known as *Commentariolus* (ca. 1515). This treatise opens with seven unproved assumptions. Briefly, they deal with the renowned Copernican hypothesis of considering the Earth in motion and the Sun, not affected by motion, near the center of the universe. Although Copernicus decides to omit the proofs for the sake of brevity (proofs would appear later in his *De Revolutionibus*), the deductions in the *Commentariolus* are supposed to be drawn from the initial seven assumptions. The nature and the logic of those assumptions have triggered debates among modern scholars. This talk examines Copernicus' seven assumptions and provides a new interpretation based on historical-philological examinations of Greek and Latin terminology on foundational issues of mathematics.

Alberto is an assistant professor in the Department of the History of Science at Tsinghua University (China), specializing in the history of astronomy from antiquity to early modernity in Byzantine, Islamicate, and Italian contexts. Author of the monograph *Persische Astronomie in Byzanz* (UTZverlag, 2020), he has taught at The Hebrew University of Jerusalem and held fellowships at the Harvard University research center Dumbarton Oaks and the Max Planck Institute for the History of Science in Berlin.

Was Euclid a Platonist philosopher? Text-based approaches to interpreting Greek mathematics

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Commentator: Miguel Angel Merma Mora

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By tackling the question of whether or not Euclid was a Platonist philosopher, I explore the scope and limits of text-based approaches to reconstructing Euclid's philosophical commitments. On first glance, Euclid's *Elements* is a purely mathematical treatise. Still, there is striking evidence for that an ontological theory of mathematical objects is systematically, yet implicitly, encoded in the *Elements* [1, 2, 5]. This raises the question of the ancestries of Euclid's ontological theory. Already in late antiquity, attempts were made to reconstruct Euclid's philosophical tenets. Most notably, Proclus argued that the *Elements* is a cosmological treatise about the geometrical elements of physical objects in the Platonist tradition because it culminates in the construction of the five Platonic solids that prominently appear in the cosmogony of Plato's *Timaeus*. Contemporary philosophers like Hempel [3] and Popper [4] argue too that Euclid's geometry is in fact a theory of physical objects. Yet, their approach is anachronistic in that they appeal only to Euclidean geometry, rather than to Euclid's geometry. By contrast, Proclus' argument is more promising and historically sensitive in that it is entirely text-based: Proclus reconstructs Euclid's philosophical commitments exclusively on the basis of compositional features of the *Elements'* text. In order to assess Proclus' text-based argument, I provide two comparisons between Euclid and pre-Euclidean philosophers. Firstly, I compare Euclid's treatment of the five Platonic solids with Plato's regarding their respective definitions and constructions. The result will be that Euclid does in fact not follow Plato, in which case Proclus' claim seems unfounded. Secondly, I compare the way in which Euclid formulated his definitions with the ways in which Plato and Aristotle did. This will yield evidence suggesting that Euclid was more of an Aristotelian than of a Platonist philosopher. Thus, by appealing to textual features other than the overall composition of the *Elements*, it can be shown that Euclid systematically encrypts elaborate philosophical views into his mathematical treatise.

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Benjamin is currently completing his doctorate in Philosophy at Humboldt-Universität zu Berlin and Princeton University. His research specializes in the interrelations between Ancient Greek philosophy and science, especially Greek mathematics, as well as on history and philosophy of science more generally. Benjamin also conducts medical research on language and cognition in schizophrenia, autism, and dementia at the Charité – Universitätsmedizin Berlin. In 2019, his dissertation project on Euclid's definitions was awarded the De Gruyter Trends in Classics Poster Prize in London. In 2022, Benjamin is going to be a visiting fellow at Cambridge Digital Humanities at the University of Cambridge.

5. Día Mundial de la Lógica — *World Logic Day*

Viernes 14 — *Friday 14*

9:00–16:00 (PE) / 14:00–21:00 (GMT)

El estudio del razonamiento y la cognición en otras culturas y lenguas: cuestiones metodológicas y prácticas

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El estudio del razonamiento, la lógica y la cognición en lenguas y culturas no occidentales tiene, necesariamente, un carácter multidisciplinario. La Antropología Social y Cultural, la Lógica, la Filosofía del lenguaje y de la mente, la Filología, la Lingüística, entre otras, son todas ellas disciplinas académicas con mucho que aportar a este tipo de estudios y, a la vez, con perspectivas y métodos de investigación muy diferentes. A la hora de afrontar este tipo de investigaciones, difícilmente el investigador será experto en todas ellas. Por ello es importante tener claros una serie de principios metodológicos que le ayuden a aprovechar las diferentes fuentes de información, perspectivas, metodologías, etc., a la vez que a evitar cometer errores conceptuales o, simplemente, producto del desconocimiento de campos ajenos a su experiencia. La ponencia pretende ofrecer una serie de principios que sirvan tanto para guiar y orientar una investigación de este tipo, como para evaluar sus resultados. Todo ello se acompañará de ejemplos y casos de estudio, en parte basados en la propia experiencia investigadora del ponente.

Alejandro es ingeniero informático por la Universidad de Oviedo (UNIOVI), licenciado en antropología social y cultural por la Universidad Nacional de Educación a Distancia (UNED) y doctor en filosofía por la Universidad de Granada (UGR). Ha sido docente universitario en la Facultad de Teología Redemptoris Mater (Perú), en la UN Andrés Bello (Chile) y en la UNIOVI. Actualmente es investigador asociado de la Unidad de Excelencia Filolab de la UGR, dedicada al estudio de las controversias y debate públicos, y del proyecto de investigación 'El acto de habla de argumentar y su lugar en la Teoría de la Argumentación' (FFI2016-79317-P), financiado por el Ministerio de Economía y Competitividad de España. Entre sus publicaciones tenemos 'Modal Qualification and the Speech-Act of Arguing in LNMA: Practical Aspects and a Theoretical Issue' (*Argumentation*, 2021), 'La diversidad lingüística como "campo de pruebas" en Teoría de la Argumentación: lengua aimara y calificación modal en el LNMA' (*Cogency* 9.1, 2017), 'A Computational Model of Pragm-dialectics as a tool for its Analysis and Appraisal' (*Informal Logic*, 35.3, 2015) y '¿Lógica Trivalente aimara? Análisis de una teoría sobre razonamiento no occidental' (*RIA* 6, 2013).

La defensa histórica de la interpretación existencial

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La interpretación existencial del cuantificador particular (\exists) se ha constituido en un dogma lógico-filosófico. Esto se debe a que la enseñanza de la lógica suele ser sistemática, pero no histórica, lo cual dificulta el reconocimiento de su evolución. En esta comunicación se objeta la interpretación existencial de \exists mediante la revisión y crítica de los argumentos expuestos a su favor durante los últimos tres siglos. La exploración histórica comienza con Frege y la analogía que establece entre el concepto de número y el de existencia en *Fundamentos de la aritmética* [1]; así como su crítica a la concepción existencial neokantiana en su *Dialogo con Pünjer sobre la existencia*. Luego, se examina la defensa de Russell; específicamente, los argumentos expuestos en *La filosofía del atomismo lógico* [5], como también las razones que lo motivaron a establecer la *teoría de las descripciones definidas* en *On denoting* [4], cuya instauración responde a un rechazo de la teoría existencial de Meinong. Dos defensores importantes de la interpretación, en su versión russelliana, son Ayer y Carnap. El primero apela al problema de las oraciones existenciales negativas, las cuales requieren de la interpretación existencial para no caer en autocontradicción; mientras que el segundo, funda su defensa en el rechazo de la noción atributiva de la existencia, bajo la cual es posible la formación de pseudoproposiciones. Posteriormente, la influencia naturalista de Quine fortalece la interpretación, pues el famoso lema 'ser es ser el valor de una variable' sienta un profundo influjo debido a que es la herramienta fundamental del reduccionismo ontológico quineano. Finalmente, en nuestro siglo el metaontólogo Inwagen, en *Being, existence and ontological commitment* [3], ha planteado una defensa de la interpretación que apela a la *metaontología quineana*. Una lista de cinco tesis cuya pretensión es erigir la identidad entre existencia y cuantificación particular. Luego de la revisión histórica de estos argumentos, se procede a impugnarlos con el apoyo de los aquellos filósofos que no admiten la interpretación existencial.

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- [4] B. Russell. *On denoting. Mind* 14(56), 1905.
- [5] B. Russell. *The philosophy of logical atomism. The Monist* 28, 1918.

Eduardo es estudiante de filosofía de la Universidad Nacional de San Agustín de Arequipa (UNSA), miembro del Círculo de Estudios de Filosofía Analítica (CEFA) y socio de la Sociedad Iberoamericana de Argumentación (SIBA). Sus intereses son la lógica, la metafísica y la teoría de la argumentación.

Historia, implicaciones filosóficas y límites de las lógicas cuánticas: las ‘familias de historias consistentes’ como alternativa

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La expresión ‘lógica cuántica’ es, sin duda, una expresión *homónima*. Se han agrupado bajo dicho nombre, desde estudios desarrollados a principio del siglo XX que terminaron asentando el uso generalizado del espacio de Hilbert en la descripción de sistemas cuánticos, hasta aproximaciones filosóficas centradas en determinar cuál era el núcleo teórico de dicha teoría física. Sin embargo, existe un análogo respecto del cual todos estos desarrollos se llaman ‘lógicas cuánticas’: la propuesta original de Birkhoff y von Neumann [1] y el posterior proyecto de Finkelstein [3] y Putnam [5] de estudiar el núcleo teórico de la mecánica cuántica desde una perspectiva lógica (como radicalización de la propuesta de Birkhoff y von Neumann) buscando formalizarla en una nueva semántica proposicional. Siguiendo estas líneas proliferó a lo largo del siglo XX una pluralidad de cálculos [cf. 2, 6]. En este contexto, además, Putnam [5] incluso argumentaría a favor del carácter empírico (*a posteriori*) de la propia lógica (llegando incluso a proponer que toda la lógica clásica habría de abandonarse a favor de una nueva ‘lógica cuántica’). Con el paso de los años, sin embargo, terminó demostrándose que este proyecto (el de realizar una formalización consistente de la teoría física en nuevo cálculo lógico-cuántico) era prácticamente imposible, si no inviable del todo. La presente comunicación expondrá de manera sistemática los límites de cada una de las propuestas de formalización de la mecánica cuántica a partir de las lógicas cuánticas realizadas a lo largo de todo el siglo XX para, finalmente, introducir el formalismo de las ‘familias de historias consistentes’ de Griffiths [4]. Este formalismo, también conocido como ‘nueva lógica cuántica’, no busca ya crear un cálculo lógico-cuántico forzando simbolizaciones *ad hoc*, sino, por el contrario, localizar dónde, en el seno del formalismo de la propia mecánica cuántica, *rige* una lógica de corte clásico. Más allá de las posibles aplicaciones formales en campos eminentemente físicos (computación, resolución y disolución de aparentes paradojas, etc.), se podrá ahora visitar el debate en torno al carácter empírico de la lógica y conectar numerosos debates metafísicos hasta ahora aislados en, por un lado, la filosofía de la física y, por el otro, la filosofía de la lógica y del lenguaje.

Referencias

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- [6] K. Svozil. *Quantum logic*. Springer, 1998.

Alejandro estudió filosofía y derecho en la Universidad Complutense de Madrid (UCM) y se especializó en el Máster Interuniversitario de Lógica con un trabajo sobre el estudio de las lógicas cuánticas y sus límites. Ha obtenido el premio Beatriz Galindo al mejor Trabajo de Fin de Grado de Estudios Clásicos y la beca Iniciación a la Investigación en la Universidad de Granada para estudiar

aproximaciones lógicas modales a la relatividad especial. Actualmente es profesor de Lógica Formal en la URJC de Madrid, doctorando en la UCM, presidente de la Asociación Tales, coordinador de la célula de Lógica y Física de la Asociación de Epistemología de la UCM e investigador en el Instituto de Estudios del Mundo Antiguo y la RIEFA. Su trabajo se centra en el estudio de la historia y filosofía de la lógica (en concreto modal) y sus aplicaciones en física.

Conferencia especial

Quipus: aproximaciones al corpus

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Desde finales del siglo XIX, los investigadores de los quipus —conjuntos de cordeles anudados que cumplieron la función de la escritura en los andes por más de mil años— han pedido su catalogación, registro minucioso y divulgación científica. Esto ha dado lugar a la publicación de inventarios de quipus ‘canónicos’ o ‘de estilo inca’, que en los últimos veinte años se han digitalizado en el marco de varias bases de datos. Sin embargo, los estudios actuales del corpus mundial siguen enfatizando el análisis de ejemplares individuales. En esta charla preguntaré: ¿Cómo pueden evolucionar las conclusiones extraídas de estos casos cuando se estudian desde diferentes puntos de vista interpretativos: desde ‘cerca’ y ‘lejos’; cualitativos y cuantitativos? Tras una introducción a los casi 1400 quipus dispersos en museos y colecciones privadas de más de veinte países, esta charla repasará, mediante varios estudios de caso, las técnicas actuales basadas en corpus para el estudio y desciframiento de quipus. A medida que los investigadores del quipu siguen ampliando la colaboración interdisciplinar, resulta cada vez más evidente que las herramientas de la lingüística de corpus y las humanidades digitales pueden servir a los esfuerzos actuales de maneras novedosas e inesperadas.

Manny es investigador asociado del Departamento de Antropología Social de la Universidad de Saint Andrews (Escocia), donde se centra en el desciframiento de los quipus. Además, Manny estudia quipus conservados en colecciones de todo el mundo, con especial énfasis en la historia de su excavación, intercambio y análisis. Muchas de las ideas de esta charla se derivan de mi nuevo libro, *Quipus: Mil años de historia anudada en los andes y su futuro digital* (Planeta, 2021), que ha recibido mención de la Revista Caretas en su recuento de las publicaciones peruanas más destacadas de 2021, y que presenta el estado de la cuestión sobre este tema. Sus enfoques más amplios incluyen la historia de la tecnología, las humanidades digitales y la historia de la arqueología andina. Su investigación ha sido presentada por NPR, Google Arts & Culture, El Comercio, NewScientist y el Boston Globe, entre otros. Manny es licenciado en Matemáticas Aplicadas por la Universidad de Harvard.

6. Paraconsistencia e historia — *Paraconsistency and history*

Sábado 15 — Saturday 15

9:00–12:00 (PE) / 14:00–18:00 (GMT)

The *ex falso sequitur quodlibet* and the paraconsistent perspective in Western thought

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In this talk, I will discuss the principle *ex falso sequitur quodlibet* and outline a historical analysis on how a paraconsistent perspective was properly constituted in Western thought and how principles, rules, and axiomatic logical systems began to express distinct concepts of paraconsistency.

Itala is graduated in mathematics from the Pontifical Catholic University of Campinas (1966), and has a degree in music (piano) from the Carlos Gomes Musical Conservatory in Campinas (1960). She has a master's degree (1974) and a doctorate (1982) in mathematics, both from the Universidade Estadual de Campinas (Unicamp). She has also had postdoctoral fellowships at the University of California at Berkeley, Stanford University, and the University of Oxford. She is currently Full Professor (Collaborator) of Logic and Foundations of Mathematics in the Department of Philosophy of Unicamp. She is a founding member of the Centre for Logic, Epistemology and History of Science (CLE) at Unicamp, and of the Brazilian Logic Society (SBL). She has been the director of CLE for four terms (1986-1993, 2004-2009), the president of the SBL for four terms (1994-2003, 2011-2014), president of the Latin-American Committee on Logic of the Association for Symbolic Logic for two terms (1993-1999) and head of the Coordination Center for Interdisciplinary Research (COCEN) at Unicamp for two terms (1998-2002, 2009-2013). She is also a member of several scientific societies. D'Ottaviano is the creator and editor of the *Collection CLE*, a collection of books in the areas of logic, epistemology, and history of science, with more than ninety published volumes. Her areas of expertise are logic and the foundations of mathematics, history and philosophy of science, algebra of logic, non-classical logics, universal logic, and self-organization and systems theory. She was Dean of Graduate Studies at Unicamp from 2013 to 2014. In 2014, she was awarded the Aristotle Medal by the Academy of Sciences and Humanities of the Stagira Institute of Higher Studies of Mexico, an award given to Mexican and foreign researchers who have carried out research or teaching for the benefit of society. D'Ottaviano is a member of the Brazilian Logic Society and the Mexican Logic Academy, and is an elected member of the Brazilian Academy of Philosophy (ABF) and of the Académie Internationale de Philosophie des Sciences (AIPS).

Pseudo-Scotus and the history of the *ex falso*

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In the remarkable medieval logical, the commentary on Aristotle's *Prior Analytics* [2], now attributed to Pseudo-Scotus, titled *In universam logicam quaestiones*, the form of the *ex falso sequitur quodlibet* is completely different from the one made famous by Łukasiewicz when he wrongly baptized it as 'Duns Scotus' law'. In his renowned book on Aristotle's syllogistic, he discussed the implicative form of 'Duns Scotus' law', describing it as follows: 'if p , then if not- p , then q ' [1, p. 80]. Pseudo-Scotus' derivation of the *ex falso* exemplifies a mature and well-developed logico-classical paradigm in the High Middle Ages. Although he was not the first in the history of logic to propose the *ex falso* law, he certainly must be included among those who contributed to providing a systematic justification of it in the context of scholastic logic. In our talk, we will discuss Pseudo-Scotus' genuine statements on the *ex falso* as well as some hypothesis concerning his identity.

References

- [1] J. Łukasiewicz. *Aristotle's syllogistic from the standpoint of modern formal logic*. OUP, 1955.
- [2] Pseudo-Scotus. In *universam logicam quaestiones*. *Ioannis Duns Scoti Opera Omnia*, vol. 1 (L. Wadding, Ed.). Laurentius Durand, 1639.

Evandro has been a Professor at the Philosophy Department of the Universidade Estadual de Maringá since 2004. He has worked in Basic Education (Elementary, Secondary, and Vocational Education) and in Higher Education in various educational institutions and establishments. He has a degree in Philosophy from Faculdades Claretianas de Batatais (1997), a Master in Philosophy from the Universidade de São Paulo (2002), and a PhD in Philosophy from the Universidade Estadual de Campinas (2013). His research focuses on the history and philosophy of logic with an emphasis on the historical research of logical methods, theories, and systems both classical and non-classical. Within the general history of logic he is dedicated to both classical and non-classical logic, a research field to which he has contributed several articles and books. As a researcher she investigates the history of paraconsistent logics and the gradual establishment of paraconsistency in the Western tradition. Evandro also researches the history of logic in Brazil since the colonial era. Since September 2018, he has been doing a Post-Doctoral Internship as Visiting Researcher at the Centre for Logic, Epistemology and History of Science at the State University of Campinas, deepening his research about the history of paraconsistency and paraconsistent logic in the Western tradition (part of it in collaboration with Itala D'Ottaviano), with emphasis on the perception of the historical contributions to the development of paraconsistency, whether syntactic or semantic.

Horarios

Timetable

C Conferencista invitado — <i>Keynote lecturer</i>
E Presentación especial — <i>Special presentation</i>
P Ponente — <i>Regular Speaker</i>

1. Introducción — *Introduction*

Lunes 10 de enero — *Monday 10 January*

9:00–9:15 (PE)	14:00–14:20 (GMT)	Palabras iniciales — <i>Opening words</i>	
9:15–9:50 (PE)	14:20–14:50 (GMT)	Luis F. Bartolo	E
10:00–11:50 (PE)	15:00–17:00 (GMT)	Ivahn Smadja	C

2. Enfoques etnopsicológicos — *Ethno-psychological approaches*

Martes 11 de enero — *Tuesday 11 January*

9:00–10:50 (PE)	14:00–15:50 (GMT)	Caleb Everett	C
10:50–11:00 (PE)	15:50–16:00 (GMT)	PAUSA — <i>BREAK</i>	
11:00–12:00 (PE)	16:00–17:00 (GMT)	Val Dusek	R
12:00–13:00 (PE)	17:00–18:00 (GMT)	Călinoiu, Garancini, and Yuen	R

3. Historia — *History (1)*

Miércoles 12 de enero — *Wednesday 12 January*

9:00–10:50 (PE)	14:00–15:50 (GMT)	Karine Chemla	C
10:50–11:00 (PE)	15:50–16:00 (GMT)	PAUSA — <i>BREAK</i>	
11:00–12:00 (PE)	16:00–17:00 (GMT)	Sandra Visokolskis	R
12:00–13:00 (PE)	17:00–18:00 (GMT)	Ellen Lehet	R

4. Historia — *History* (2)

Jueves 13 de enero — *Thursday 13 January*

9:00–10:50 (PE)	14:00–15:50 (GMT)	Graham Priest	C
10:50–11:00 (PE)	15:50–16:00 (GMT)	PAUSA — <i>BREAK</i>	
11:00–12:00 (PE)	16:00–17:00 (GMT)	Alberto Bardi	R
12:00–13:00 (PE)	17:00–18:00 (GMT)	Benjamin Wilck	R

5. Día Mundial de la Lógica — *World Logic Day*

Viernes 14 de enero — *Friday 14 January*

9:00–10:50 (PE)	14:00–15:50 (GMT)	Alejandro Secades	C
10:50–11:00 (PE)	15:50–16:00 (GMT)	PAUSA — <i>BREAK</i>	
11:00–12:00 (PE)	16:00–17:00 (GMT)	Eduardo Fajardo	R
12:00–13:00 (PE)	17:00–18:00 (GMT)	José A. Fernández	R
10:50–11:00 (PE)	18:00–19:00 (GMT)	PAUSA — <i>BREAK</i>	
14:00–16:00 (PE)	19:00–21:00 (GMT)	Manuel Medrano	E

6. Paraconsistencia e historia — *Paraconsistency and history*

Sábado 15 de enero — *Saturday 15 January*

9:00–10:50 (PE)	14:00–15:50 (GMT)	Itala D'Ottaviano	C
10:50–11:00 (PE)	15:50–16:00 (GMT)	PAUSA — <i>BREAK</i>	
11:00–12:50 (PE)	16:00–17:50 (GMT)	Evandro Gomes	C
12:50–13:00 (PE)	17:50–18:00 (GMT)	Palabras finales — <i>Final words</i>	

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