

Philippos Papayannopoulos

(Birth name: Filippos - Anastasios Papagiannopoulos)

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Areas of Specialization

Philosophy of Computing, Philosophy of Science, Logic and Foundations of Mathematics

Areas of Competence

Philosophy of Computer Science, History of Computing, Philosophy of AI, Philosophy of Cognitive Science, Philosophy of Physics, Environmental Ethics

Employment

3/2024 – 6/2024: Adjunct Lecturer

Department of Philosophy, University of Ioannina, Greece

11/2021 – 10/2023: Postdoctoral Fellow

Institute for History and Philosophy of Sciences and Technologies - IHPST (UMR 8590)

Université Paris 1 Panthéon-Sorbonne and CNRS

Research project: *The Geometry of Algorithms (GoA)*, funded by the Agence nationale de la recherche (ANR);

PI: Professor Alberto Naibo

10/2020 – 09/2021: Postdoctoral Fellow

Department of Philosophy, The Hebrew University of Jerusalem, Israel

Research Project: *The Indeterminacy Of Computation*, funded by the Israel Science Foundation;

PI: Professor Oron Shagrir

10/2019 – 9/2020: Postdoctoral Fellow

Sidney M. Edelstein Center for the History and Philosophy of Science, Technology and Medicine,
The Hebrew University of Jerusalem, Israel

2/2019 – 9/2019: Postdoctoral Fellow

Department of Philosophy, The Hebrew University of Jerusalem,

and Department of Brain and Cognitive Sciences, Ben-Gurion University of the Negev

Research Project: *The Indeterminacy Of Computation*, funded by the Israel Science Foundation; PI: Prof. O. Shagrir

Education

2018: PhD in Philosophy. University of Western Ontario, London, Canada.

Dissertation: "Computing, Modelling, and Scientific Practice: Foundational Analyses and Limitations" <https://ir.lib.uwo.ca/etd/5660/>

Committee: Professor Wayne Myrvold (supervisor), Professor John L. Bell, Professor Christopher Viger, Professor Christopher Timpson (external, Oxford), Professor Mark J. Daley (Computer Science)

2018: CERTIFICATE in University Teaching and Learning

Teaching Support Centre, University of Western Ontario, London, Canada

2012: MA in History and Philosophy of Science and Technology (with distinction; two-year interuniversity program)
National and Kapodistrian University of Athens and National Technical University of Athens,
Master's thesis: "Mathematical Explanations of Physical Phenomena"; *Supervisor*: Prof. Stathis Psillos

2010: Diploma in Applied Mathematics and Physics (five-year program, integrated MSc and BSc degree)
National Technical University of Athens (Athens Polytechnic), School of Applied Mathematics and Physics, Greece.
Specialization: Applied physics (Optoelectronics and advanced technological materials)

Publications and Work in Progress

Peer-reviewed

- **2023**: "On Algorithms, Effective Procedures, and Their Definitions", *Philosophia Mathematica*, 31:3, 291–329, <https://doi.org/10.1093/philmat/nkad011>
- **2022**: "Computational indeterminacy and Explanations in Cognitive Science", *Biology & Philosophy* 37, 47 <https://doi.org/10.1007/s10539-022-09877-8> (with N. Fresco and O. Shagrir; first author)
- **2022**: "On Two Different Kinds of Computational Indeterminacy", *The Monist* 105(2):229–246. <https://doi.org/10.1093/monist/onab033> (with N. Fresco and O. Shagrir; first author)
- **2022**: "Some Philosophical Remarks on the Current Definitions of Algorithms." *Proceedings of the 13th Panhellenic Logic Symposium*, Vol.II <http://panhellenic-logic-symposium.org/13/proceedings-2022.pdf>
- **2021**: "Unrealistic Models for Realistic Computations: How idealisations help represent mathematical structures and found scientific computing", *Synthese*, 199: 249-283 <http://dx.doi.org/10.1007/s11229-020-02654-8>
- **2020**: "Computing and Modelling: Analog vs. Analogue", *Studies in History and Philosophy of Science Part A*, 83: 103-120 <https://doi.org/10.1016/j.shpsa.2020.05.001>

Editorial work

- (with M. Cuffaro) (Eds.) *Proceedings of the 9th International Workshop on Physics and Computation, 2018, EPTCS*, Vol. 273

Work in progress

- [In preparation] "Euclidean Constructions, Algorithms and Constructive objects" (with Alberto Naibo; tentative title)
- [In preparation] "Developing a Definition for 'Algorithms': What is at stake?" (tentative title)
- [In preparation] "Restoring the Peace Between Abstract Algorithms and Computations: A Dynamical Systems Approach" (tentative title)
- [In preparation] "A Tale of Two Algorithms: computations de re and computations over names" (tentative title)

Web-based (popular) articles

- **2023**: "Hallucinating Robots?" Interview about the prospects and dangers of AI (in Greek), CNN Greece: <https://www.cnn.gr/tech/story/358604/rompot-me-paraisthiseis-apantiseis-gia-to-chatgpt-kai-tin-texniti-noimosyni>
- **2016**: "What did Gödel show with his first incompleteness theorem?" *Rotman Institute of Philosophy Blog* <http://www.rotman.uwo.ca/godel-theorem/>
- **2016**: "A new upgrade of your universe is now available!" – A post about the simulation universe hypothesis, computing systems, and the 2016 Isaac Asimov debate. *Rotman Institute of Philosophy Blog* <http://www.rotman.uwo.ca/simulation-universe/>

Scholarships and Awards (competitive)

2019: Sidney M. Edelstein Scholarship for Postdoctoral Research (Israel)

2018: Faculty of Arts and Humanities Graduate Thesis Research Award (Canada)

2017: Faculty of Arts and Humanities Graduate Thesis Research Award (Canada)

2016: Province of Ontario Graduate Scholarship (awarded to eight international students at University level)

2014: Rotman Institute of Philosophy Doctoral Scholarship (Canada)

2014: Western University Graduate Research Scholarship (Canada)

Talks / Conference Activity

Invited talks

2023: "Algorithms and Computations as Dynamical Systems: A conceptual modeling proposal", Schloss Dagstuhl research meeting 23516 on Formalising the Notion of Algorithm, December 17-21, **Schloss Dagstuhl** – Leibniz Center for Informatics, Dagstuhl (Germany).

2023: "Euclid goes to Russia: geometric constructions, algorithms, and constructive objects", *Workshop on the Indeterminacy of Computation*, **Israel Institute for Advanced Studies**, July 10-13, Jerusalem

2023: "A Tale of Two Algorithms: computations de re and computations over names", Annual (invitation-only) Conference in Dubrovnic, Croatia, co-organized by the departments of philosophy at Ohio State University (US), University of Maribor (Slovenia), and University of Rijeka (Croatia). June 13-16.

2023: "Defining Algorithms and Explicating Computations. some methodological remarks" *Algorithms Seminar*, *Centre Lourcine de l'Université Paris 1 Panthéon-Sorbonne*, May 4.

2022: "Algorithms and Computations as Dynamical Systems. A Formal Proposal for Restoring an Old Peace" *Colloquium in Mathematical Philosophy: Philosophy of Science*. **Munich Center for Mathematical Philosophy**, December 21, Munich.

2022: "Restoring Peace Between Abstract Algorithms and Concrete Computations: a role for continuity." *Workshop Logic and Computing: How Do They Interface?* November 7-8, Lyon.

2022: "From Algorithms to Computations: Physical Assumptions and Limitations" *Philosophical and Historical Perspectives on Computation and Physics*, May 30-31, IHPST, Paris.

2021: "On Two Different Kinds of Computational Indeterminacy" (with Nir Fresco and Oron Shagrir), plenary lecture (via zoom), *The 2021 Summit of the International Society for the Study of Information (IS4SI 2021)*, September 12-19.

2019: "The Limits of My Representation Mean the Limits of My Computation", *The Phonological Conundrum: A Workshop on the Representation of Language*, June 5-6, Hebrew University of Jerusalem

2019: "Computing and Modelling: Analog vs. Analogue" Department of Classics and Philosophy, March 20, University of Cyprus, Nicosia

Peer-reviewed talks (contributed papers)

2023 "Different Conceptions of Algorithms and the Challenges of Developing a Definition", *7th International Conference on the History and Philosophy of Computing (HaPoC)*, October 18-20, Warsaw, Poland

2023 "Euclidean Constructions, Algorithms, and Constructive Objects", *17th Congress on Logic, Methodology and Philosophy of Science and Technology (CLMPST)*, July 24-29, Buenos Aires, Argentina (based on joint work with Alberto Naibo)

2022 “Algorithms, Computations and De Re Knowledge of Mathematical Entities” (in Greek), *7th Panhellenic Conference on the Philosophy of Science*, December 1-3, Athens, Greece

2022 “Some Philosophical Remarks on the Current Definitions of Algorithms” *13th Panhellenic Logic Symposium*, July 6-10, Volos, Greece

2021 “On Two Different Kinds of Computational Indeterminacy” *6th International Conference on the History and Philosophy of Computing* (HaPoC), October 27-29, Zurich, Switzerland (based on joint work with Nir Fresco and Oron Shagrir)

2021 “Unrealistic Models for Realistic Computations: On the Role of Idealizations in Founding Scientific Computing”, *European Philosophy of Science Association Biennial Meeting* (EPSA), September 15-18, Turin, Italy

2020: “Representations in Mathematical and Scientific Computing” (in Greek, via videoconference), *6th Panhellenic Conference on the Philosophy of Science*, December 3-5, Athens, Greece

2020: “The Indeterminacy of Computation and the Underdetermination of Theory”, *Workshop on Indeterminacy and Underdetermination*, January 24-25, UCD Dublin, Ireland, (based on joint work with Nir Fresco and Oron Shagrir)

2019: “Are Computational Explanations Indetermined?”, *5th International Conference on the History and Philosophy of Computing* (HaPoC), October 28-30, Bergamo, Italy (based on joint work with Nir Fresco and Oron Shagrir)

2019: “Computing and Modelling: Analog vs. Analogue”, *British Society for the Philosophy of Science Annual Conference* (BSPS), July 17-19, Durham, UK

2019: “Computing by Representing in Science and Mathematics: Where Shannon Meets Turing”, *Workshop on Computation in Scientific Theory and Practice*, Munich Center for Mathematical Philosophy, May 31– June 2, Munich, Germany

2018: “Are Algorithms always effective procedures?” (in Greek), *5th Panhellenic Conference on the Philosophy of Science*, November 29-30, Athens, Greece

2018: “Algorithms and Real Computation: A Quest for Foundations”, *Twenty-Sixth Biennial Meeting of the Philosophy of Science Association* (PSA), November 1-4, Seattle, USA

2018: “Remarks on the Incompatibility of Foundational Analyses of Scientific Computing”, *British Society for the Philosophy of Science Annual Conference* (BSPS), July 4-6, Oxford, UK

2017: “Incompatible Models of Computation over the Reals and Their Importance for Scientific Computing”, *European Philosophy of Science Association Biennial Meeting* (EPSA), September 6-9, Exeter, UK

2017: “Rival Models of Computation over the Reals and Their Importance for Scientific Computing”, *British Society for the Philosophy of Science Annual Conference* (BSPS), July 13-14, Edinburgh, UK

2017: “Real Number Algorithms: Incompatible Foundations” *Triennial International Conference of the Italian Society for Logic and Philosophy of Science* (SILFS), June 20-23, Bologna, Italy

2017: “The Open Texture of ‘Real Number Algorithms’”, *Canadian Society for the History and Philosophy of Mathematics Annual Meeting* (CSHPM), May 28-30, Toronto, Canada

Participation in invitation-only workshops

2019: *The Multi-Level Structure of Reality*, Israel Institute for Advanced Studies, May 25-30, Hebrew University of Jerusalem, Israel

2018: *Algorithmic Information, Induction and Observers in Physics*, Perimeter Institute for Theoretical Physics, April 9-13, Waterloo, Canada

Workshops/Symposia organized

2023: HaPoC Symposium on the Definitions of Algorithms at the *17th Congress on Logic, Methodology and Philosophy of Science and Technology* (CLMPST), 24-29 July, 2023, Buenos Aires (with A. Naibo).

2022: Workshop on Philosophical and Historical Perspectives on Computation and Physics, May 30-31, 2022, IHPST, Paris (with A. Naibo).

2020: Workshop on the Role of Representation in Computation, Edelstein Center for the History and Philosophy of Science, Technology and Medicine, May 7-9, Jerusalem [*Cancelled due to Covid-19*].

2018: 9th International Workshop on Physics and Computation (with M. Cuffaro). IUT de Fontainebleau, Fontainebleau, France, June 25-29 (Satellite to the 17th International Conference on Unconventional Computation and Natural Computation).

2015-2018: Philosophy of Logic, Mathematics, and Physics Graduate Conference (LMP), University of Western Ontario

Teaching Experience

Hebrew University of Jerusalem (Instructor)

2021 *Philosophical Topics in Computation* [March – June, 2021]

(undergraduate course developed by me)

University of Western Ontario (Teaching Assistant)

2018: *Environmental Philosophy* [Winter]

2017: *Understanding Science* [Fall]

2015-2016: *Introduction to Logic* [Full year]

2014-2015: *Introduction to Logic* [Full year]

Secondary education

2019-2020: Voluntary high school teacher of mathematics and physics, Jerusalem

2004-2014: Private tutor to high school students in physics & mathematics, Greece

Academic Service

Journal Referee for: *Philosophy of Science, Studia Logica, Studies in History and Philosophy of Science Part B: Studies in History and Philosophy of Modern Physics, Theoria, Synthese, Canadian Journal of Philosophy.*

Conference Referee Service

2018: 9th International Workshop on Physics and Computation. IUT de Fontainebleau, France.

2015-2017: Philosophy of Logic, Mathematics, and Physics Graduate Conference (LMP), UWO.

Professional Experience (philosophy-related)

2016-2017: Assistant Editor in General Philosophy of Science, *PhilPapers*, Western University

2016-2017: Rotman Institute of Philosophy *Media and Outreach Assistant*, Western University

2017: Index creation of the volume: M. E. Cuffaro and S. C. Fletcher (eds.) *Physical Perspectives on Computation, Computational Perspectives on Physics*, CUP

Community Involvement/Media and Outreach

2015-2018: Constant involvement in the organization of outreach activities by the Rotman Institute of Philosophy: exhibitions for the general public, public talks and panel discussions, *Philosophical Photography contest*, K-12 Educational Outreach group, etc. Experience with Livestreaming of talks and public events.

2014-2016: Environment and Sustainability Committee Member, Rotman Institute of Philosophy, Western University (this committee developed environmentally friendly initiatives at the Institute and around the University campus).

Philosophical Associations

Rotman Institute of Philosophy (Alumnus), Canadian Society for the History and Philosophy of Mathematics, Canadian Philosophical Association, British Society for the Philosophy of Science, Philosophy of Science Association, European Philosophy of Science Association, Commission for the History and Philosophy of Computing, The POND (Philosophy Of Science Around the Mediterranean)

Graduate Courses Taken and Audited (* indicates audited course)

- *History and Philosophy of Science:* Foundations of Physics in Historical Perspective (R. DiSalle), Recent Trends in Philosophy of Biology (G. Barker), History of Philosophy of Science in the 20th Century (K. Okruhlik), Metaphysics of Science* (S. Psillos), Empiricism* (S. Psillos), History of Technology (A. Tympas), Sciences and the Philosophy of Science in the 20th Century (A. Baltas), History of Science I: Ancient (J. Christianides),
- *Logic and Philosophy of Mathematics:* Gödel's Incompleteness Theorems (R. DiSalle), Philosophy of Mathematics* (John L. Bell), Logic (C. Dimitracopoulos), History of Ancient Logic (C. Dimitrakopoulos)
- *Metaphysics, Language, Epistemology:* Kripke (G. Marti, R. Stainton), Proseminar (R. DiSalle), Metaphysics and Epistemology (Y. Stephanou), Philosophy of Language* (Y. Stephanou), Philosophy of Identity (A. Hatzimoysis)
- *History of Philosophy:* Modern Philosophy (S. Virvidakes), Ancient Philosophy (K. Ierodiakonou), Plato's Republic (P. Kalligas, V. Karasmanis)