

Silvia De Toffoli

Curriculum Vitae

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Academic Appointments

- 2022-pres. **Linköping University**, *Department of Culture and Society*, Wallenberg Academy Fellow.
- 2022-pres. **Technical University of Berlin**, *Institute of History and Philosophy of Science, Technology, and Literature*, Department Affiliate.
- 2019–2022 **Princeton University**, *Philosophy Department*, Postdoctoral Research Associate and Lecturer.

Education

- 2014–2019 **Ph.D. in Philosophy**, Stanford University.
Thesis: *Epistemic Roles of Mathematical Diagrams*, committee: Thomas Ryckman (supervisor), Michael Friedman, Krista Lawlor, Marcus Giaquinto.
Research visits: Columbia University (fall 2016), IHPST – Institute of History and Philosophy of Sciences and Technology, Paris (spring 2017), University of Pennsylvania (fall 2017), Goethe University Frankfurt (spring 2018).
- 2019 **Ph.D. Minor in Philosophy, Literature, and the Arts**, Stanford University.
Advisor: R. Lanier Anderson.
- 2016 **M.A. in Philosophy**, Stanford University.
- 2009–2013 **Ph.D in Mathematics**, Technical University of Berlin.
Thesis: *Degrees of Essentiality for Secants of Knots*, Supervisor: John Sullivan.
- 2006–2009 **M.Sc. in Mathematics**, University of Bologna.
As visiting student: University of Paris 7, France (2007-2008).
- 2004–2006 **B.Sc. in Mathematics**, University of Bologna.
As visiting student: University of Calgary, Canada (2004-2005).

Publications

Articles and Book Chapters

- forth **Who's Afraid of Mathematical Diagrams?**, *Philosophers' Imprint*.
- forth **What Is Mathematical Rigor?**, *Aphex*, (with John Burgess).
- forth **Intersubjective Propositional Justification**, in: *Propositional and Doxastic Justification: New Essays on Their Nature and Significance*, Eds. Paul Silva Jr. & Luis Oliveira, Routledge.

- forth **Objectivity and Rigor in Classical Italian Algebraic Geometry**, *Noesis*, (with Claudio Fontanari).
- 2022 **What Are Mathematical Diagrams?**, *Synthese*, 200:86, 1-29.
- 2021 **Groundwork for a Fallibilist Account of Mathematics**, *The Philosophical Quarterly*, Volume 7, Number 4, 823-844.
- 2021 **Reconciling Rigor and Intuition**, *Erkenntnis*, Volume 86, 1783-1802.
- 2019 **Leopardi: ‘Everything is Evil’**, in: *Evil—A History*, Ed. Andrew Chignell, Oxford University Press, 350-357.
- 2017 **‘Chasing’ The Diagram – The Use of Visualizations in Algebraic Reasoning**, *The Review of Symbolic Logic*, Volume 10, Number 1, 158-186.
- 2016 **Envisioning Transformations – the Practice of Topology**, in: *Mathematical Cultures*, Ed. Brendan Larvor, Birkhäuser, 25-50, (with Valeria Giardino).
- 2015 **An Inquiry into the Practice of Proving in Low-Dimensional Topology**, in: *From Logic to Practice*, Eds. Gabriele Lolli, Marco Panza, Giorgio Venturi, Boston Studies in the Philosophy and History of Science, Volume 308, 315-336, (with Valeria Giardino).
- 2014 **Forms and Roles of Diagrams in Knot Theory**, *Erkenntnis*, Volume 79, 829-842, (with Valeria Giardino).

Editorial Work

- 2018 **Tools of Reason: The Practice of Scientific Diagramming from Antiquity to the Present**, *Special issue of Endeavour*, with a co-authored introduction, Volume 42 (2-3), 49–59, (with Paula Findlen and Greg Priest).

Work in Progress

How To Do Things with Diagrams – the Case of Mathematics, *book manuscript in preparation*.

The Epistemological Subject of Mathematics, in: *The Handbook of the History and Philosophy of Mathematical Practice*, Ed. Bharath Sriraman, Springer, in preparation.

Entries: “Diagrams” and “Fallibilism in Mathematics”, *The Third Edition of the Blackwell Companion to Epistemology*, Ed. Kurt L. Sylvan, in preparation.

Recalcitrant Disagreement in Mathematics: An Endless and Depressing Controversy in the History of Italian Algebraic Geometry, *R&R*, (with Claudio Fontanari).

Successful Transmission of Justification Across Fallacious Arguments, *in preparation*.

New Tools for Kant’s Incongruent Counterparts, *in preparation*.

Nietzsche’s Conception of Logic, *in preparation*.

Conference Proceedings

- 2018 **Fruitful Over-Determination in Knot Diagrams**, *Proceeding of Diagrams 2018, Lecture Notes in Computer Science*, 10871 LNAI, 807–809.
- 2012 **Meta-Vermeer: A Topological Reinterpretation of a Masterpiece**, *Proceeding of Bridges 2012: Mathematics, Music, Art, Architecture, Culture*, 499-502, (with Yasuhiro Sakamoto).

Outreach

- forth **Le certezze irraggiungibili della matematica (“The Unreacheable Certainties of Mathematics”)**, *Archimede, La rivista per gli insegnanti e i cultori di matematiche pure e applicate*.
- 2022 **Conversation with John P. Burgess**, *Aphex*, Number 25.
- 2022 **I nodi dell’intelligenza artificiale (“The Knots of Artificial Intelligence”)**, *Maddmaths! – Matematica Divulgazione Didattica*, 2 gennaio 2022.
- 2017 **Numeri. Divagazioni, calcoli, giochi (“Numbers. Digressions, calculations, games”)**, 2nd Edition, preface by Furio Honsell, (with Dario De Toffoli and Dario Zaccariotto), Edizioni Koala (1st Edition, 2008, Stampa Alternativa, Viterbo, introduction by Stefano Bartezzaghi).

Interviews

- 2022 **Anche la matematica è un’attività umana – intervista a Silvia De Toffoli**, *Il Tascabile*, intervista di Andrea Zanni, Jan. 3, 2022.
- 2021 **Filosofia pratica della matematica, istruzioni per l’uso – intervista a Silvia De Toffoli**, *Maddmaths! – Matematica Divulgazione Didattica*, di Roberto Natalini, June 6, 2021.

Teaching Experience

As Main Instructor

- 2021-2022 **Mathematical Rigor Between Theory and Practice**, *Princeton University*, graduate seminar (with John Burgess).
- 2020-2021 **Theory of Knowledge**, *Princeton University*, upper division undergraduate class.
- 2019-2020 **Philosophy of Mathematics**, *Princeton University*, upper division undergraduate class (with John Burgess).
- 2017-2018 **Philosophy of Mathematics**, *Stanford University*, upper division undergraduate class.
- 2016-2017 **Introduction to Philosophy**, *City College New York*, undergraduate class.
- 2013-2014 **Algebraic Topology**, *Montana State University*, graduate seminar.

As Teaching Assistant

- 2016-2017 **Philosophy and Literature**, *Stanford University*, undergraduate class (Instructors: R. Lanier Anderson and Josh Landy).
- 2015-2016 **Epistemology**, *Stanford University*, undergraduate class (Instructor: Eli Alshanetsky).
- 2015-2016 **Introduction to Philosophy of Science**, *Stanford University*, undergraduate class (Instructor: Helen Longino).
- 2010-2011 **Topology**, *Technical University of Berlin*, Master class (Instructor: John Sullivan).

Grants & Awards

- 2021 **Wallenberg Academy Fellowship**, *Linköping University, Swenden*, (>1 million Euros).
- 2017-2019 **Ric Weiland Graduate Fellow in the Humanities & Sciences**, *Stanford University*.
- 2017 **France-Stanford Visiting Student Researcher Fellowship**, *IHPST, Institute of History and Philosophy of Sciences and Technology, Paris*.
- 2014-2019 **PhD scholarship**, *Stanford University*.
- 2013 **Certificate of Distinction from the Berlin Mathematical School**, for the *Ph.D. thesis* Degrees of essentiality for secants of knots.
- 2009-2013 **PhD scholarship**, *Berlin Mathematical School*.

Events Organization

Main Organizer

- April 2021 **Society Session of the Philosophy of Mathematics Association: Rigor and Intuition**, *Pacific APA, Online, Portland*.
- April 2020 [**CANCELED**] **Conference: The ‘End’ of Philosophy of Mathematics?**, *Conference at Princeton University*, (with John Burgess).
- Aug. 2019 **Symposium of the Association for the Philosophy of Mathematical Practice**, in: *16th Congress of Logic, Methodology and Philosophy of Science and Technology*, Prague, (with Andrew Arana).
- Aug. 2018 **Symposium of the Association for the Philosophy of Mathematical Practice**, in: *XXIV World Congress of Philosophy*, Beijing.
- Feb. 2018 **Workshop: Mathematical Reasoning**, *Stanford University*, (with Rebecca Morris).
- Oct. 2017 **Workshop: Varieties of Visualization in Mathematics**, in: *4th International Meeting of the Association for the Philosophy of Mathematical Practice*, Salvador, Brazil.
- Feb. 2017 **Conference: Tools of Reason: The Practice of Scientific Diagramming from Antiquity to the Present**, *Stanford University*, (with Paula Findlen and Greg Priest).

Member of Scientific or Organizing Committee

- Sept. 2022 **13th International Conference on the Theory and Application of Diagrams**, Rome, Member of the Scientific Committee of the Philosophy Track.
- Sept. 2021 **12th International Conference on the Theory and Application of Diagrams**, Online, Member of the Scientific Committee of the Philosophy Track.
- July 2021 **6th International Conference of the Association for the Philosophy of Mathematical Practice**, Online, Chapman University, Member of the Organizing Committee.
- Aug. 2020 **11th International Conference on the Theory and Application of Diagrams**, Tallinn, Member of the Scientific Committee of the Philosophy Track.
- Jan. 2020 **5th International Conference of the Association for the Philosophy of Mathematical Practice**, ETH, Zurich, Member of the Organizing Committee.
- June 2018 **10th International Conference on the Theory and Application of Diagrams**, Edinburgh, Member of the Scientific Committee of the Philosophy Track.

Service to the Discipline

- 2022-pres. **Member of the International Advisory Board of *Phenomenology & Mind***.
- 2021-pres. **Assistant Editor of *APhEx***, (*Analytical and Philosophical Explanations*) – Italian journal for analytic philosophy, *Open Problems* section.
- 2019-pres. **PhilPapers Editor**, Categories: “Mathematical Practice,” “Visualization in Mathematics,” “Philosophy of Literature,” “Fiction,” “The Basing Relation,” “Propositional and Doxastic Justification,” and “Epistemic Fallibilism.”
- 2018-pres. **Member of the Steering Committee**, Association for the Philosophy of Mathematical Practice (APMP).

Refereeing (Journals)

Axiomathes, *The British Journal for the Philosophy of Science*, *Erkenntnis*, *Dialectica*, *Journal for General Philosophy of Science*, *Journal of Humanistic Mathematics*, *Kriterion*, *Manuscrito*, *Philosophia Mathematica*, *The Philosophical Quarterly*, *Philosophy of Science*, *Spatial Cognition and Computation: An Interdisciplinary Journal*, *Synthese*, *The Textile Museum Journal*, *Theoria*, *Topoi*.

Refereeing (Books)

Cambridge University Press, Éditions de la Sorbonne.

Refereeing (Grants)

Graduate Women in Science (GWIS) National Fellowship Program, Fondecyt Program National Research and Development Agency (Chile).

Presentations

(* = invited)

Coming Up

- Sept. 2022 **European Summer School on the Philosophy of Mathematics**, *University of Konstanz*, 5-days tutorial on “Mathematical Knowledge”.
- June 2022 **EEN (European Epistemology Network) Conference**, *University of Glasgow*, “Mathematical Justification”.
- June 2022 **University of St Andrews**, *Arché’s research stream “Epistemology: Current Themes”*, “Successful Transmission of Justification Across Fallacious Arguments”.
- May 2022 **University of Trento**, *Maths Bites Trento, Department of Mathematics*, “Rigore e Intuizione in Matematica”.

Past

- March 2022 **CUNY (City University of New York), Graduate Center**, *Philosophy Colloquium*, “Successful Transmission of Justification Across Fallacious Arguments”.
- March 2022 **Université Paris Cité**, *SPHERE, History and Philosophy Seminar, Mathematics 19th-21st*, “Recalcitrant Disagreement in Mathematics”.
- March 2022 **Université Côte d’Azur, Nice**, *Centre de Recherches en Histoire des Idées, Séminaire d’histoire et de philosophie des sciences*, “Fallibilisme en mathématiques”.
- Jan. 2022 **Eastern APA**, *Session of the Philosophy of Mathematics Association, Baltimore, Online*, “Beliefs, Degrees of Beliefs, and ‘Probabilistic Proofs’”.
- Dec. 2021 ***Mathematical Collaborations 4**, *Vrije Universiteit Brussel and University of Leeds*, “Higher-Order Evidence in Mathematics”.
- Oct. 2021 **FPMW13-13th French PhilMath Workshop**, *Nice*, “Diagrams and the Apriority of Mathematics”.
- Sept. 2021 **SIFA 2021-14th Conference of the Italian Society for Analytic Philosophy**, *Noto, Sicily*, “Diagrams and the Apriority of Mathematics”.
- Sept. 2021 ***Workshop: Text-Driven Approaches to the Philosophy of Mathematics**, *Duisburg-Essen University, online*, “Algebraic and Graphical Languages: the Case of Monoidal Categories”.
- Aug. 2021 ***Workshop: Topic in Philosophy of Mathematical Practice**, *University of Copenhagen, online*, “Reconciling Rigor and Intuition”.
- July 2021 **University of Bologna**, *Seminar in the mathematics department*, “Rigore e Intuizione in Matematica”.

- July 2021 **6th International Conference of the Association for the Philosophy of Mathematical Practice**, *Chapman University, Online*, “Mathematical Practice and Analytic Epistemology”.
- June 2021 **University of Trento**, *Seminar for the PopMat Laboratory*, “Cosa sono I diagrammi matematici?”.
- June 2021 **Science & More Talks**, *Center for Logic, Language and Cognition (LLC), University of Turin*, “Can we form a justified belief in mathematics based on an incorrect argument?”.
- June 2021 **Carl Friedrich von Weizsäcker-Colloquium**, *University of Tübingen, Online*, “What are Mathematical Diagrams?”.
- Feb. 2021 **Stirling University**, *Visiting Speaker Seminar*, “A Case for the Fundamentality of Doxastic Justification”.
- Jan. 2021 ***Workshop: Logic & Philosophy of Mathematics in the Evening**, *organized by D. Kant and D. Sarikaya, online*, “Mathematical Justification”.
- Jan. 2021 **Eastern APA**, *online*, Comments on “Nietzsche... and Possibility of Metaphysics”.
- Dec. 2020 **University of Trento**, *Online seminar for the PopMat Laboratory*, “Philosophy of Mathematical Practice”.
- Nov. 2020 **Canadian Society for the History and Philosophy of Mathematics**, *online seminar series*, “The Epistemological Subject of Mathematics”.
- May 2020 **Texas A&M University**, *online talk for a research group on mathematical reasoning*, “Who’s Afraid of Mathematical Diagrams?”.
- April 2020 **[Postponed] *Conference: Understanding Mathematical Explanation**, *Rutgers University*, “Mathematical Explanations in Practice”.
- April 2020 **[Canceled] Conference: The ‘End’ of Philosophy of Mathematics?**, *Princeton University*, “Mathematical Justification Ain’t What it Seems”.
- March 2020 **[Canceled] Conference: Dimensions of Epistemic Justification**, *University of Cologne*, commentator at large.
- Jan. 2020 **5th International Conference of the Association for the Philosophy of Mathematical Practice**, *ETH, Zurich*, “A Fallibilist Account of Mathematical Justification”.
- Nov. 2019 **Carnegie Mellon University**, *Philosophy Colloquium*, “Diagrammatic Notations in Mathematical Proofs”.
- Nov. 2019 **Rutgers University**, *Talk at the Proof Comprehension Research Group*, “Mathematical Diagrams”.
- Aug. 2019 **16th Congress of Logic, Methodology and Philosophy of Science and Technology**, *Prague*, “The Epistemic Basing Relation in Mathematics”.
- June 2019 **Masterclass in the Philosophy of Mathematical Practice**, *Vrije Universiteit Brussel*, “Mathematical Justification in Practice”.
- June 2019 ***Conference: Explanatory and Heuristic Power of Mathematics**, *University of Roma La Sapienza*, “Grasping How a Proof Supports its Conclusion”.

- June 2019 **Intersem Seminar Series**, *Paris 7*, organized by Mic Detlefsen, “Rigorous Diagrammatic Proofs”.
- May 2019 ***Conference: Big Proofs**, *International Center for Mathematical Sciences, Edinburgh*, “Diagrammatic Notations in Mathematical Proofs”.
- April 2019 **Macalester College**, *Philosophy Colloquium*, “Mathematical Justification in Practice”.
- April 2019 **Pacific APA**, *Society for Realist-Antirealist Discussion, Vancouver*, “Proof, Simil-Proofs, and Mathematical Justification”.
- Dec 2018 **Mathematics in Action**, (*invited*) *Henri Poincaré Archives, Nancy*, “Mathematical Justification in Practice”.
- Aug. 2018 **XXIV World Congress of Philosophy**, *Beijing*, “Fruitful Over-determination for Mathematical Notations”.
- Aug. 2018 **XXIV World Congress of Philosophy, Association for Mathematical Practice Session**, *Beijing*, “What is a Mathematical Diagram”.
- July 2018 ***Proofs and Representations Workshop**, *Munich Center for Mathematical Philosophy*, “Heterogenous Notations for Mathematical Proofs”.
- June 2018 **10th International Conference on the Theory and Application of Diagrams**, *Edinburgh*, “Fruitful Over-Determination in Knot Diagrams”.
- March 2018 **Stanford University**, *Psychology Department, Jay McClelland Laboratory*, diagrams in Mathematics.
- Feb. 2018 **University of British Columbia, Okanagan campus**, *Philosophy Colloquium*, “Diagrams in Mathematical Practice”.
- Jan. 2018 **Eastern APA**, *Society for Realist-Antirealist Discussion, Savannah*, “Proofs and Diagrams in Mathematics”.
- Oct. 2017 **4th International Conference of the Association for the Philosophy of Mathematical Practice**, *Salvador, Brazil*, “Varieties of Mathematical Diagrams”.
- July 2017 ***Conference: Visual Reasoning and Intuition in Mathematics**, *Free University of Berlin*, “Knots and Embeddings: New Tools for Incongruent Counterparts”.
- June 2017 ***Conference: Logic in Question 7**, *Sorbonne University, Paris*, “Thinking with Diagrams: The Case of Mathematics”.
- June 2017 **PhilMath seminar series**, *IHPST, Paris*, “Varieties of Mathematical Diagrams”.
- June 2017 ***PROOFS workshop**, *IHPST, Paris*, “The Notion of Proof in the Practice of Mathematics”.
- April 2017 ***Workshop: Mathématiques en action**, *Archives Henri Poincaré, Nancy*, “What is a Mathematical Diagram?”.
- Feb. 2017 **Conference: Tools of Reason**, *Stanford University*, “Thinking with Diagrams: The Case of Mathematics”.

- Nov. 2016 **Midwest PhilMath Workshop 17**, *Notre Dame University*, “Thinking with Diagrams: The Case of Mathematics”.
- Sept. 2016 **City College New York**, *Philosophy Colloquium*, “Aspects of Diagrammatic Reasoning in Mathematics”.
- July 2016 **Vrije Universiteit Brussel**, *Philosophy Colloquium*, (with Isar Goyvaerts) “Aspects of Diagrammatic Reasoning in Category Theory”.
- June 2016 **University of Udine**, *Mathematics and computer science colloquium*, “Pensare con i Diagrammi: il caso dei Nodi”.
- June 2016 ***Five Years MCMP: Quo Vadis, Mathematical Philosophy?**, *Munich Center for Mathematical Philosophy*, ““Varieties of Visualizations in Mathematics”.
- April 2016 ***43rd philosophy of science conference in Dubrovnik**, *Dubrovnik, Croatia*, “Diagrams in Algebra”.
- Nov. 2015 ***3rd International Conference of the Association for the Philosophy of Mathematical Practice**, (*keynote*) *Sorbonne University, Paris*, ““Chasing’ The Diagram – The Use of Visualizations in Algebraic Reasoning”.
- March 2015 **Proofs and Pictures Conference**, *University of South Carolina, Columbia*, ““Chasing’ The Diagram – The Use of Visualizations in Algebraic Reasoning”.
- Feb. 2013 **What is? Seminar**, *Berlin Mathematical School*, “What is a Rational Tangle?”.
- Sept. 2012 **FilMat Conference**, *Scuola Normale Superiore, Pisa*, (with Valeria Giardino) “La dinamica dei diagrammi in teoria dei nodi”.
- Sept. 2012 **SIFA 2012-Conference of the Italian Society for Analytic Philosophy**, *Alghero, Italy*, (with Valeria Giardino) “Roles and Forms of Diagrams in Knot Theory”.
- Sept. 2012 **Mathematical Cultures Conference**, *London*, (with Valeria Giardino) “Low-dimensional topology as visual mathematics”.
- June 2012 **Free University of Berlin**, *Sybille Krämer’s colloquium*, “Die epistemische Rollen von Diagrammen in der Topologie”.
- May 2012 **Conference of the French Society for Analytic Philosophy (SOPHA)**, *École Normale Supérieure, Paris*, (with Valeria Giardino) “Diagrammes et Illustrations en Topologie: Le Cas des Nœuds”.
- Jan. 2012 **Work in Progress Seminar**, *Munich Center of Mathematical Philosophy*, “The Knot Moves: A Case Study on Diagram Dynamics”.
- Jan. 2012 **University of Sevilla**, *Philosophy Colloquium*, (with Valeria Giardino) “Use and Epistemic Roles of Diagrams in Knot Theory”.
- Jan. 2012 **Work in Progress Seminar**, *Munich Center of Mathematical Philosophy*, (with Valeria Giardino) “The Knot Moves: A Case Study on Diagram Dynamics”.
- Dec. 2009 **What is? Seminar**, *Berlin Mathematical School*, “What is a Seifert Surface?”.

Languages

Italian: native.

English: excellent (reading, writing, and speaking).

German and French: fluent (reading, writing, and speaking).

References

John P. Burgess (research and teaching)

John N. Woodhull Professor of Philosophy, Princeton University
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