

Raffaele Danna

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EDUCATION

- 2016 – 2021 **PhD in History, University of Cambridge, Faculty of History, Pembroke College.** Thesis title: *The Spread of Hindu-Arabic Numerals in the European Tradition of Practical Arithmetic, a Socio-Economic Perspective (13th-16th Centuries)*. Supervisor: Prof. C. Muldrew. DOI 10.17863/CAM.72497
- 2013 – 2015 **MA in Philosophical Sciences, University of Bologna** – 110/110 with distinction and recommendation for publication (dignità di stampa). Dissertation: *Su Fibonacci e le eredità della matematica pratica nell'età nuova*. Supervisors: Prof. A. Angelini and V. Zamagni. Overseas exchange at University of California, San Diego (2013)
- 2013 – 2015 **Collegio Superiore** – School of excellence of the University of Bologna. Visiting student at Scuola Normale Superiore, Pisa (2015)
- 2010 – 2013 **BA in Philosophy, University of Bologna** 110/110 with distinction

ACADEMIC POSITIONS

- 06/2025 – *in progress* **Sant'Anna School of Advanced Studies, Institute of Economics, Pisa.** Researcher (Rtd-a) in Economic History.¹
- 09/2023 – 05/2025 **European University Institute, Faculty of History, Fiesole.** Max Weber Fellow in History.²
- 02/2021 – 08/2023 **Sant'Anna School of Advanced Studies, Institute of Economics, Pisa.** Postdoctoral Fellow in Economics, Horizon 2020 Project ReCreating Europe.³

PUBLICATIONS

Monograph

- *The Craft of Indo-Arabic Numerals: How Practical Arithmetic Shaped Commerce and Mathematics in Western Europe, 1200-1600*. Monograph contracted, peer reviewed, and accepted for publication with Harvard University Press. Publication date: 14/04/2026. ISBN: 9780674279339.⁴

Peer-reviewed papers

- Algebra in Transit in Late Medieval and Early Modern Europe, *Physis* (2025), 60 (1), 1-30. DOI: 10.1400/300583.
- The spread of Hindu-Arabic numerals among practitioners in Italy and England (13th-16th c.): two moments of a European innovation cycle? *Datini Studies in Economic History* (2023), 259-287. DOI: 10.36253/979-12-215-0092-9.06.
- Elaboration and diffusion of useful knowledge in the long run: the case of European practical arithmetic (13th-16th centuries), *Rivista di Storia Economica* (2022), 1, 57-84. DOI: 10.1410/104038.

¹ <https://www.santannapisa.it/it/raffaele-danna>

² <https://www.eui.eu/people?id=raffaele-danna>

³ <https://www.recreating.eu>

⁴ <https://www.hup.harvard.edu/books/9780674279339>

- Figuring Out: the Spread of Hindu-Arabic Numerals in the European Tradition of Practical Mathematics (13th-16th centuries), *Nuncius*, (2021), 36 (1), 1-44. DOI: 10.1163/18253911-bja10004.
Awarded the Young Scholars' Best Paper Award, Italian Society for the History of Science (2024). As working paper, special mention for the Prize in Economics and History of Institutions, Associazione Marcello de Cecco (2019).
- Una scienza per la rinascita. Note su Paolo dell'Abaco e la matematica abacistica fiorentina, *Rinascimento* (2019), 59, 245-269. ISSN 0080-3073.
- L'“ombra del beato regno” – presenze umbratili nel Purgatorio di Dante. *Dianoia* (2014), 19, 61-91. ISSN 1125-1514.

Working papers

- (with F. Brusori) Guest editor for a Special Issue of *Galilaeana – Studies in Renaissance and Early Modern Science*. Theme: “Knowledge in Use. Practices and Practitioners in the Renaissance and Early Modern Period (14th-17th centuries)”. Expected publication: October 2026.⁵
- (with M. Iori and A. Mina) ‘A Numerical Revolution: The Diffusion of Practical Mathematics and the Growth of Pre-Modern European Economies’, SSRN Working Paper and LEM Working Paper, 2022.⁶
Winner of two awards: Best Paper Award at the DRUID Conference, 2022 (Copenhagen), and Best Paper Award in memory of Paul A. David – Workshop on The Organization, Economics and Policy of Scientific Research, 2024 (Turin).
- (with T. Morel) ‘Text and practices: situating mathematics in practical arithmetic manuals. Evidence from German and Italian cases (14th-16th c.)’, in R. Wagner and S. Babu (eds.), *Normative Texts and Occupational Practices*, Boston Studies in the Philosophy and History of Science, Cham: Springer. Peer reviewed and accepted: forthcoming.
- (with S. Locatelli) ‘Dalla teoria alla prassi della matematica: libri d’abaco e pratiche di mercatura nel tardo medioevo’, *Studi di Storia Medioevale e Diplomatica*. Peer reviewed and accepted: forthcoming.
- ‘The Values of Numbers: The Roots of European Algebra in Late Medieval Commercial Capitalism’.
- (with J. Mazzei, A. Nuvolari, A. Martinelli) ‘Social norms or informal know how trading? Knowledge transfer among haute cuisine chefs’.
- (with A. Nuvolari) ‘Negative Intellectual Property Spaces: Towards a Taxonomy and a Theory’.
- (with A. Nuvolari and A. Martinelli) Negative Intellectual Property Spaces: a Review Article. Peer-reviewed and accepted for publication: forthcoming in a volume published by Open Book Publishers, edited by M. Kretschmer (Glasgow).

Book Chapters

- Un rinascimento dal basso: l’aritmetica mercantile e la sua epistemologia pratica, in *Lo sguardo del lupo. Arte, matematica e filosofia nell’umanesimo del Quadrivio*, Bologna: Pendragon (2024), 43-72. ISBN 9788833646367.

Other scholarly output

- [co-edited volume] (with A. Baldazzini, G. Bottos, E. Desiata, F. Nasi, O. Palmi, F. Rustichelli, and A. Venieri) *La governance del digitale in Italia: innovazione, democraticità e sviluppo sociale*, Bologna: Nous Media, 2024. ISBN 979-12-210-5510-8.

⁵ <https://www.museogalileo.it/it/attivita/news/call-for-abstracts-galilaeana-knowledge-in-use.html>

⁶ https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4143442
<https://www.lem.sssup.it/WPLem/2022-18.html>

- [co-edited volume] (with G. Bottos and L. Mesini) De Rita, G. *Il popolo della sabbia. Una riflessione sulla ricerca sociale e sulle trasformazioni della società italiana*, Roma: Castelvechi, 2017. ISBN 978-88-6944-837-9.
- Leonardo Fibonacci. *La Nuova Informazione Bibliografica* (2016), 3, Bologna, Il Mulino, 471-496. ISSN: 1824-0771.

Book reviews

- “Jessica Otis, By the numbers: numeracy, religion, and the quantitative transformation of early modern England (New York: Oxford University Press)”, *Historia Mathematica* (2025), forthcoming.
- “Pamela Smith, From lived experience to the written word: reconstructing practical knowledge in the early modern world (Chicago: University of Chicago Press)”, *Centaurus* (2023), 65 (4), 899-901. DOI 10.1484/J.CNT.5.137301.
- “Niccolò Guicciardini (ed.), Anachronisms in the History of Mathematics (Cambridge: Cambridge University Press)”, *Nuncius* (2022), 37, 721-755. DOI: 10.1163/18253911-tat00001.
- La crisi in tre atti, la crisi in tre libri (review of *The Ascent of Money*, by Niall Ferguson, *Money: The Unauthorised Biography* by Felix Martin, and *Crashed* by Adam Tooze), *Rivista Il Mulino* (2020), 69 (2), 323-328. DOI: 10.1402/96722.
- “William Deringer, Calculated Values: Finance, Politics, and the Quantitative Age (Cambridge, Mass. & London: Harvard University Press)”, *The Economic History Review* (2019), 72(1), 411-412. DOI: 10.1111/ehr.12833.

Outreach

- “L’odyssée des chiffres”: three-episodes documentary series on the history of numbers produced by the Franco-German public TV channel ARTE, directed by Benoit Laborde. Interviewed for episodes 2 and 3. Documentary aired in spring 2025.⁷
- [Blogpost] (co-authored with A. Nuvolari and A. Martinelli) Negative Intellectual Property Spaces, Copyright Evidence Portal, 10/12/2021.⁸
- [Interview to Nobel Prize in Physics] Oltre i confini della ricerca: intervista al Premio Nobel Didier Queloz, *Civiltà delle Macchine* (2020), 2, 5-9.
- [Blogpost] The spread of Hindu-Arabic numerals in the tradition of European practical mathematics, *The Long Run – The Economic History Society Blog*, 11/07/19.⁹

Policy Papers and Reports

- (co-authored with A. Baldazzini, G. Bottos, E. Desiata, O. Palmini, A. Venieri) *Le vie della digitalizzazione: rapporto sulle strategie delle imprese attraverso e oltre la crisi Covid-19*, Pandora Rivista and Fondazione Unipolis (2021). [research report].
- (co-authored with P. Doudonis, C. Paetz, D. Sardo) *From ‘Homework’ to ‘Politics’ Some Reflections in favour of a Eurozone Fiscal Capacity*, FEPS YAN Policy Paper (2017).

⁷ <https://www.arte.tv/fr/videos/111663-001-A/l-odysee-des-chiffres-1-3/>

⁸ <https://www.create.ac.uk/blog/2021/12/10/21-for-2021-negative-intellectual-property-spaces/>

⁹ <https://ehs.org.uk/the-spread-of-hindu-arabic-numerals-in-the-tradition-of-european-practical-mathematics/>

AWARDS AND GRANTS

2025-2028	Italian Ministry of University and Research (Ministero dell'università e della ricerca), Fondo Italiano per la Scienza (FIS). Award of FIS Starting Grant (1.327 mln €) as PI of the project <i>Working Knowledge: the emergence of practitioners in late medieval and early modern Europe</i> (WorKnow).
2024	Italian Society for the History of Science, 2024 Young Scholars' Best Paper Award for the paper 'Figuring Out: the Spread of Hindu-Arabic Numerals in the European Tradition of Practical Mathematics (13th-16th centuries)', <i>Nuncius</i> , (2021), 36 (1), 1-44.
2024	(with M. Iori and A. Mina) Workshop on The Organization, Economics and Policy of Scientific Research (Turin), Best Paper Award in memory of Paul A. David for the working paper 'A Numerical Revolution: The Diffusion of Practical Mathematics and the Growth of Pre-Modern European Economies'
2024	Young Scholars' Top Ten Award, Accademia delle Scienze di Bologna, University of Bologna
2023	Early-Stage Researchers' Fund, European University Institute
2022	(with M. Iori and A. Mina) Druid Conference (Copenhagen), Best Paper Award for the working paper 'A Numerical Revolution: The Diffusion of Practical Mathematics and the Growth of Pre-Modern European Economies'.
2019 – 2020	Economic History Society, Bursary Scheme for Postgraduate Students
2019 – 2020	Cambridge Political Economy Society Trust
2019 – 2020	University of Cambridge, Faculty of History, Prince Consort Studentship
2019	Associazione Marcello de Cecco, Prize in Economics and History of Institutions: special mention for the working paper 'Figuring Out: the Spread of Hindu-Arabic Numerals in the European Tradition of Practical Mathematics (13th-16th centuries)'
2019	Ellen McArthur Fund Student Grant
2018-19, 2017-18	INET Young Scholars Initiative event grant. Project: The Politics of Economics seminar (first and second cycle)
2018-19, 2017-18	CRASSH Centre Cambridge, Graduate and Faculty Research Networks grant. Project: The Politics of Economics seminar (first and second cycle). Grant plus administrative support and access to CRASSH facilities and resources.
2018	School of Arts & Humanities Graduate-led Symposia Funding. Project: CamQueer History (series of events for LGBT+ History Month 2018)
2016 – 2019	Cambridge Trust Vice-Chancellor & Pembroke College scholarship, full-time doctoral award covering University fees for three years, plus annual maintenance grant
2015	Collegio Superiore – Bologna, exchange student scholarship at the Scuola Normale Superiore of Pisa
2013 – 2014	University of California, UCSD – USA, Overseas programme, full university fees

2013 – 2015	Collegio Superiore, School of excellence of the University of Bologna, MA funding full fees and accommodation
2013	University of Bologna, award for first class degree result (BA degree)

SELECTED PRESENTATIONS (* invited speaker)

- * “Refiguring accounting practices: the use of numerals in European accounts (14th–17th centuries)”, **World Economic History Congress**, panel on “Foundations of Growth: Knowledge, Human Capital, and Institutional Dynamics”, Lund University, 28th July, 2025.
- * “Luca Pacioli’s *Divina proportione* (1509)”, Medici Archive Project **Lecture Series in Conjunction with Italian Manuscript and Book Exhibition (Shanghai Library, 2026)**, recorded on 22nd July, 2025.
- “The Values of Numbers - The Roots of European Proto-symbolic Algebra in Late-medieval Commercial Capitalism and Technological Transition”, **STS Italia Conference**, Polytechnic University of Milan, 11th June, 2025.
- (with S. Locatelli), “Dalla teoria alla prassi della matematica: libri d’abaco e pratiche di mercatura nel tardo medioevo”, **Lessici, concetti, pratiche tra basso medioevo e prima età moderna**, University of Milan, Milan, 7th November, 2024.
- “Understanding the European adoption of Hindu-Arabic numerals (12th-14th c.)”, **European Society for the History of Science**, Barcelona, 6th September, 2024.
- “A numerical revolution: Practical arithmetic and the growth of pre-modern European economies”, **FRESH Workshop**, Louvain, 25th June, 2024.
- * “The early emergence of algebra in the European tradition of practical arithmetic, 14th-16th centuries” **Scientiae Conference**, Bruxelles, 12th June, 2024.
- “Reframing the European adoption of Indo-Arabic numerals” **Italian Society for the History of Science Conference**, University of Bari, 31st May, 2024.
- * (with T. Morel) “Practical Arithmetic between Theory and Practice (15th-16th cent.)” **Normative Texts and Occupational Practices Workshop**, ETH Zürich, 10th February, 2024.
- “The Diffusion of Hindu-Arabic Numerals in Western Europe, 13th-17th c.” **Analytical Sociology Colloquium**, European University Institute, Florence, 20th October, 2023.
- “A numerical revolution: the diffusion of practical mathematics and the growth of pre-modern European economies” **ASE Annual Meeting**, Federico II University, Naples, September 30th, 2023.
- “The Naked Chef: Exploring Negative IP Spaces in Italian Haute Cuisine” **Research Meeting on Negative Intellectual Property**, Sant’Anna School of Advanced Studies, Pisa, June 15th, 2023.
- (with A. Nuvolari) “Case studies on IP negative spaces” **ReCreating Europe: Final Conference**, Bruxelles, March 21-22nd, 2023.
- (with M. Iori and A. Mina) “A Numerical Revolution: The diffusion of practical mathematics and the growth of premodern European economies” **YETI Meeting 2022** (Young Economists of Tuscan Institutions), IMT Lucca, December 19th, 2022.
- (with A. Nuvolari and A. Martinelli) Roundtable on “Copyright works similarly in all creative industries” **Copyright Evidence: Synthesis and Futures**, University of Glasgow, Advanced Research Centre, October 17-18th, 2022.
- (with M. Iori and A. Mina) “A Numerical Revolution: The diffusion of practical mathematics and the growth of pre-modern European economies”, **Druid Conference 2022**, Copenhagen Business School, June 13-15th, 2022.

- “A comparative study in the transmission of useful knowledge: the spread of Hindu-Arabic numerals among practitioners in Italy and England (13th-16th c.)” **Datini Study Week in Economic History**, Prato, May 9th, 2022.
- “A Numerical Revolution: The diffusion of practical mathematics and the growth of pre-modern European economies” **Economic History Society Conference 2022**, University of Cambridge, April 1-3rd, 2022.
- “Un rinascimento dal basso: l'aritmetica mercantile e la sua epistemologia pratica” **L'Umanesimo del Quadrivio**, Accademia delle Scienze, Università di Bologna, March 14th, 2022.
- * “The spread of Hindu-Arabic numerals in European commercial practices: a case study on the elaboration and diffusion of a commercial paradigm in pre-industrial Europe” **Sant'Anna School of Advanced Studies, Institute of Economics, Departmental Seminar**, October 12th, 2021.
- * “Figuring out: the spread of Hindu-Arabic numerals in the European tradition of practical mathematics (13th-16th centuries)” **Institute of Historical Research, Economic and Social History of the Early Modern World Seminar**, February 7th, 2020.
- * “The adoption of Hindu-Arabic numerals in England and Italy, a comparative perspective (13th-16th c.)”, **Department of History and Philosophy of Science, Departmental Seminar, University of Cambridge**, November 7th, 2019.
- * (with Vera Zamagni) “The numeracy revolution and its application to solidaristic institutions in the Italian medieval cities”, **Summer School ‘Balancing the books. Administration and bookkeeping in premodern charitable and civic agencies’**, organised by the University of Bologna and the Fondazione del Monte di Bologna, June 24-27th, 2019.
- “The spread of Hindu-Arabic numerals in the tradition of European practical mathematics: A socio-economic perspective, 13th-16th centuries”, **Economic History Society Conference 2019**, Queen's University Belfast, April 5-7th, 2019.
- * “The Spread of Hindu-Arabic Numerals in the Tradition of European Practical Mathematics, a Socio-Economic Perspective” **Renaissance Society of America Conference**, Toronto, March 17-19th, 2019.
- * “From 1202 Pisa to 1600 London: a Sketch of the European Tradition of Practical Arithmetic” **Il Fibonacci e i percorsi mediterranei delle scienze matematiche**, University of Naples Federico II, November 28-29th, 2018.
- “The Spread of Hindu-Arabic Numerals in the Tradition of European Practical Mathematics, a Socio-Economic Perspective: 13th-16th Centuries”, **Associazione per la Storia Economica Workshop**, Bocconi University, Milan, September 14-15th, 2018.
- “The Diffusion of Hindu--Arabic Numerals, Practical Mathematics, and Economic Practices: XIII--XVI centuries”, **Economic and Social History Graduate Seminar**, University of Oxford, May 16th, 2018.
- “Charting the Diffusion of the Commercial Revolution. A Socio-Economic History of Numerals”, (poster presentation) **Economic History Society Conference 2018**, Keele University, April 6-8th, 2018.
- “Tracking the diffusion of the Commercial Revolution. A research project”, **European Historical Economics Society Conference**, Tübingen, September 1-2nd, 2017.
- “A New Mathematics across the Mediterranean: On Leonardo Fibonacci's Contribution to the Diffusion of Hindu-Arabic Numerals and Its Broad Socio-Economic Influence”, **The Medieval Mediterranean: Cultural, Religious and Economic Exchanges. IMS Postgraduate Conference 2017**, Leeds, May 20th, 2017.

CONFERENCE AND WORKSHOP ORGANISATION

- (lead organiser) **Book workshop on *The Wealth of Numbers. A Socio-Economic History of Indo-Arabic Numerals in Europe***: half-day intensive workshop over Raffaele Danna's book manuscript, European University Institute, Florence, March 8th, 2024.
- (co-organised with Alessandro Nuvolari) **Research Meeting on Negative Intellectual Property**, Sant'Anna School of Advanced Studies, Pisa, June 15th, 2023.

- (co-organised with C. Chassonnery Zaigouche, C. Laskaridis, A. Pearson, J. Wright) **Conversations on the Politics of Economics: Claims for Knowledge**: Final Conference of The Politics of Economics Research Network, CRASSH Research Centre, Cambridge, September 14th, 2022.¹⁰
- (co-organised with C. Chassonnery Zaigouche, C. Laskaridis, A. Pearson, J. Wright) **The Politics of Economics Seminar Series**. Organisation of term-time fortnightly seminars, CRASSH Research Centre, Cambridge 2017 – 2022.¹¹

TEACHING EXPERIENCE

2024	European University Institute (Fiesole) Teacher Training Certificate
2024	University of Pisa – Faculty of History Quantitative Methods for the Humanities and Social Sciences, invited lecturer.
2024	Freie Universität (Berlin) Invited lecturer for graduate seminar.
2024	College of Europe – Natolin (Warsaw) European Interdisciplinary Studies Programme. Invited lecturer for graduate seminar.
2023	European University Institute Histories of Knowledge Graduate Seminar – Faculty of History, invited lecturer (with G. Gaber). Analytical Sociology Graduate Colloquium – Department of Political and Social Sciences, invited lecturer.
2023	University of Pisa – Faculty of History Quantitative Methods for the Humanities and Social Sciences, invited lecturer.
2021 – 2024	Sant’Anna School of Advanced Studies (Pisa) <ul style="list-style-type: none"> - Examiner for the admission assessment of undergraduate students (2021, 2022) - Graduate course on the History of Capitalism, invited lecturer.
2018 – 2019	University of Cambridge – Faculty of History <ul style="list-style-type: none"> - Supervisor for Part I, Paper 14 (European History c.900 – c.1450) - Part II, Paper 1, Historical Argument and Practice. Classes in Renaissance and Cultural History (undergraduate classes part of the Bachelor’s in History degree).
2018 – 2019	University of Cambridge – Faculty of Economics Marker of admission assessment scripts for the BA in Economics.
2017 – 2018	University of Cambridge – Faculty of History Part II, Paper 1, Historical Argument and Practice classes in Intellectual and Cultural History (undergraduate classes part of the Bachelor’s in History degree).
2017	Pembroke College – University of Cambridge Invigilator at undergraduate admissions interviews.

PROFESSIONAL AFFILIATIONS, ACADEMIC AND ADMINISTRATIVE ROLES

Member of:	European Society for the History of Science (ESHS)
	Associazione per la Storia Economica (ASE)

¹⁰ <https://www.crassh.cam.ac.uk/events/35095/>

¹¹ <https://sms.cam.ac.uk/collection/2584958>

<https://hscif.org/portfolio/seminar-the-politics-of-economics/>

Economic History Society (EHS)

Società Italiana di Storia della Scienza (SISS)

Renaissance Society of America (RSA)

Reviewer for: European Review of Economic History, Nuncius, Rivista di Storia Economica, ZDM – Mathematics Education

Editorial committee member: Philosophia – Rivista della Società Italiana di Storia della Filosofia (SISF)

09/2023 – 03/2025 Fellows' Departmental Representative, Department of History, EUI

OTHER RELEVANT AFFILIATIONS AND ENGAGEMENT

- 2014 – *in progress* **Pandora Rivista**.¹²
Journal co-founder and deputy editor: journalism, publishing, research, event planning, public speaking, networking, web development, social media management. Publication of 21 monographic printed volumes, over 1000 online articles, and over 600 subscribers. Lead organiser of the Pandora Rivista Festival in Bologna with over 50 invited speakers and over 1000 participants from the public in 2023.
- 2017 – 2022 **The Politics of Economics Research Network**.¹³
Interdisciplinary research network hosted at the Centre for Research in the Arts, Social Sciences and Humanities (CRASSH) and the Expertise Under Pressure Research Project of the University of Cambridge. The group aims at bringing different disciplinary angles together for a discussion on the relations between politics and economics. Co-founder and convenor of fortnightly seminars.
- 2016 – 2017 **FEPS – Foundation for European Progressive Studies**. Member of the Young Academic Network. Policy paper editor.
- 2015 – 2016 **Scuola di Politiche** – Political Science funded program promoted by the AREL Research Centre (Rome).

LANGUAGES AND IT SKILLS

Italian (native), English (C2), German (B2), French (good reading), Spanish (good reading).

Working knowledge of Python and GIS methods. Advanced knowledge of MS Office. Acquaintance with DMS and CMS systems. Good knowledge of social media communication (Facebook, Twitter) and SEO ranking.

OTHER PROFESSIONAL EMPLOYMENT

¹² www.pandorarivista.it

¹³ <https://sms.cam.ac.uk/collection/2584958>
<https://hscif.org/portfolio/seminar-the-politics-of-economics/>
<https://www.crassh.cam.ac.uk/events/35095/>

- 2015 – 2016 **Bosch Italia Spa** – HR/Training department. Internship.
Development, organization and sales of technical training projects. Account managers support.
- 2014 **Department of Economics – Municipality of Bologna.** Internship.
Collaboration to the development of the IncrediBol public announcement, programme for the promotion of local young entrepreneurship. Collaboration with the European project Creative SpIN.
- 2013 **Centro Studi La Permanenza del Classico – University of Bologna.** Internship. Editing and proof reading of published volumes. Event planning.
- 2012 **Autofficina Sauro – Bologna – Ferrari, Maserati and Lamborghini.**
Automotive workshop and bodywork – apprenticeship.