***Olimpia Lombardi***

**Biography**

Born on March 16, 1960, in Buenos Aires, she obtained a degree in Electronic Engineering in 1983 and a degree in Philosophy in 1996, in the two cases at the University of Buenos Aires. She completed her PhD also at the University of Buenos Aires, with the dissertation *El Problema del Determinismo en la Física* (*The Problem of Determinism in Physics*) under the supervision of Prof. Dr. Gregorio Klimovsky.

Since 2008 she is the director of the Argentine research group in philosophy of physics and of chemistry, and supervised many PhD theses in the two fields.

She was professor of Philosophy of Science in the Faculty of Exact and Natural Sciences of the University of Buenos Aires.

At present she is Superior Scientific Researcher of the National Scientific and Technical Research Council (CONICET), Argentina, and Category I in the Teaching-Research Career, Ministery of Education of Argentina.

She is also Research Associate of the Centre for Philosophy of Natural and Social Science of the London School of Economics and Political Science, Charter Honorary Fellow of the John Bell Institute for the Foundations of Physics, Member of the Foundational Questions Institute, and Member o the Executive Committee of the International Siciety for the Philosophy of Chemistry.

At present she is member of the editorial board of the journals *Foundations of Physics*, *Foundations of Chemistry*, *Philosophy of Physics*, and *Hyle*.

**Additional background information**

Konex Prize in Logics and Philosophy of Science, Konex Foundation, Argentina.

Head of three international research projects and seven national research projects.

Author of five books, editor of four books, and author of more than 150 articles in specialized journals and books.

Many citations in journals and books. *Scopus* (August 2023): 1022 citations in 436 documents.   
*h-index* = 18

Member of juries for international prizes and for international research projects: *National Science Foundation*, USA (NSF) (two times), *European Science Foundation* (ESF), *Czech Science Foundation* (GAČR), *Research Foundation Flanders*, Belgium (FWO: Fonds voor Wetenschappelijk Onderzoek) (three times), *Austrian Science Fund*, Austria (FWF), *National & Kapodistrian University of Athens*, *University of Leuven* (KULeuven), *Comisión Nacional de Investigación Científica y Tecnológica* of Chile (CONICYT) (three times), *Comisión Sectorial de Investigación Científica* of Uruguay (CSIC), *Instituto de Investigaciones Filosóficas de la UNAM* of México (IIF), among other institutions.

Reviewer of books for MIT Press and Springer. More than 170 reviews of articles for journals: *Erkenntnis*, *Nature-Scientific Reports*, *Philosophy of Science*, *The British Journal for the Philosophy of Science*, *Proceedings of the Royal Society A*, *Synthese*, *Studies in History and Philosophy of Science*, *Studies in History and Philosophy of Modern Physics*, *European Journal for Philosophy of Science*, *Foundations of Physics*, *Foundations of Chemistry*, *Foundations of Science*, *Journal for General Philosophy of Science*, *International Journal of Quantum Foundations*, *Hyle-International Journal for Philosophy of Chemistry*, *European Journal of Chemistry*, *Substantia. An International Journal of the History of Chemistry*, *Physica A*, *Current Physical Chemistry*, *International Journal of Theoretical Physics*, *Minds and Machines*, *Entropy*, *Chemistry-A European Journal*, Centaurus, *Information*, *Physics Essays-An International Journal dedicated to Fundamental Questions in Physics*, *Theoria*, *Crítica*,*Tópicos*, *Revista de Filosofía Universidad Complutense de Madrid*, *Scientiae Studia*, *Educación Química*, *Metatheoria*, *Revista Mexicana de Física*, *Anales de la AFA*, among others.

Guest speaker in many universities and institutes: University of Bristol, University of Maryland, Universidad de Barcelona),University of Tartu, **Centre National de la Recherche Scientifique**, Université de Paris 1, The Hebrew Universiy of Jerusalem, Instituto de Filosofía y Ciencias de la Complejidad of Chile, International Centre for Theoretical Physics of San Pablo,Descartes Centre for the History and Philosophy of the Sciences and the Humanities of the Utrecht University, Instituto de Investigaciones Filosóficas, Universidad Nacional Autónoma de México, Foundational Questions Institute, Facultad de Ciencias Físicas y Matemáticasof the Universidad de Concepción of Chile, Universidade de Rio de Janeiro, University of **Oxford, UK),** Universidade Federal da Bahia of Brasil), Universidad de la República of Montevideo, Università della Santa Croce of Rome, Universidad Autónoma de Madrid (España), Katholieke Universiteit Leuven, among other institutions.

Supervisor of 4 Assistant Researchers of CONICET, of 3 research stays of PhD foreign students, supervisor of 11 PhD theses, and co-supervisor of 7 PhD theses. Supervisor of 12 Doctoral scholarships and 6 Posdoctoral scolarships of CONICET

Member of 17 PhD Juries: Katholieke Universiteit Leuven, Universidad del País Vasco, Universidad Nacional Autónoma de México, Universidad Alberto Hurtado of Chile, Universidad de Buenos Aires, and other Argentine universities. Member of 13 Master Juries: Universidad Nacional Autónoma de México, Universidad de Buenos Aires and other Argentine universities.

**Research projects**

**a) International**

Head of the project “The Cosmological Origin of the Arrow of Time” (ID-61785), funded by *John Templeton Foundation* (JTF): 2021-2023.

Head of the project “A Modal Interpretation for the Quantum Ontology” (ID-57919), funded by *John Templeton Foundation* (JTF): 2015-2018.

Head of the project “The Nature of Information for an Informational Reformulation of the Modal-Hamiltonian Interpretation of Quantum Mechanics” (FQXi-RFP3-1337), funded by *Foundational Questions Institute* (FQXi): 2014-2015.

**a) National**

Co-head of the project “Tres problemas filosóficos en la fundamentación de la física: Interpretación de la mecánica cuántica, irreversibilidad y relaciones interdisciplinares” (PIP 11220-200100483CO), funded by Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET): 2021-2023.

Head of the project “La interpretación de la mecánica cuántica y de sus relaciones con otros dominios teóricos y disciplinares” (PICT-4519), funded by Agencia de Promoción Científica y Tecnológica, Fondo para la Investigación Científica y Tecnológica (FONCyT): 2019-2021.

Head of the project “La Aplicación de un Realismo Pluralista a Problemas de las Filosofías de las Ciencias Particulares: Física, Química, Biología” (PICT-2812), funded by Agencia de Promoción Científica y Tecnológica, Fondo para la Investigación Científica y Tecnológica (FONCyT): 2015-2017.

Head of the project “La Aplicación de un Realismo Pluralista a Problemas de las Filosofías de las Ciencias Particulares” (PIP 00303), funded by Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET): 2012-2014.

Co-head of the project “Hacia una Mejor Comprensión de la Decoherencia y una Nueva Interpretación de la Mecánica Cuántica y la Teoría Cuántica de Campos” (UBACyT 00080), funded by Secretaría de Ciencia y Técnica de la Universidad de Buenos Aires: 2011-2014.

Co-head of the project “Reconstrucción de la Mecánica Cuántica y Fundamentos de la Decoherencia” (CSB 908), funded by Universidad del Centro Educativo Latinoamericano (UCEL): 2010-2011.

Head of the project “Relaciones Interteóricas e Interdisciplinarias desde la Perspectiva de un Realismo Pluralista” (PIP 00597), funded by Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET): 2009-2011.

Co-head of the project “Dos Problemas en la Fundamentación de la Física Teórica: Irreversibilidad e Interpretación de la Mecánica Cuántica” (UBACyT X-041), funded by Secretaría de Ciencia y Técnica de la Universidad de Buenos Aires: 2008-2010.

Head of the project “La Interpretación de la Mecánica Cuántica y su Relación con la Química Molecular” (único ganador de concurso), funded by Sociedad Argentina de Análisis Filosófico (SADAF): 2008-2009.

Co-head of the project “Interpretación Modal-Hamiltoniana de la Mecánica Cuántica: Medición Cuántica, Decoherencia y Límite Clásico” (CSB 905), funded by Universidad del Centro Educativo Latinoamericano (UCEL): 2008-2009.

Head of the project “El Problema Filosófico de la Irreversibilidad en Mecánica Estadística Clásica y Mecánica Cuántica. Proyecciones a la Filosofía de la Química” (PIP 5130), funded by Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET): 2006-2007.

Co-head of the project “Fundamentación de la Mecánica Cuántica y de su Relación con el Mundo Químico” (CSB 103), funded by Universidad del Centro Educativo Latinoamericano (UCEL): 2007.

Head of the project “El Problema de la Irreversibilidad: Mecánica Estadística, Cosmología y Mecánica Cuántica” (0364/03), funded by Universidad Nacional de Quilmes: 2003-2006.

**Publications**

**a) Books**

Olimpia Lombardi, *¿Existe la flecha del tiempo? Ilya Prigogine: entre la ciencia y la filosofía*. Buenos Aires: Logos, 2015.

Martín Labarca & Olimpia Lombardi, *Irreversibilidad y Pluralismo Ontológico. Una Reflexión acerca de los Fundamentos de la Mecánica Estadística*. Buenos Aires: Imago Mundi, 2013.

Olimpia Lombardi & Ana Rosa Pérez Ransanz, *Los Múltiples Mundos de la Ciencia. Un Realismo Pluralista y su Aplicación a la Filosofía de la Física*. México: UNAM-Siglo XXI, 2012.

Olimpia Lombardi, *Aspectos Filosóficos de la Teoría del Caos*. Buenos Aires: Editorial Universitaria Rioplatense, 2012.

Olimpia Lombardi, Sebastián Fortin, Juan Sebastián Ardenghi & Mario Castagnino, *Introduction to the Modal-Hamiltonian Interpretation of Quantum Mechanics*. New York: Nova Science, 2010.

**b) Edited volumes**

Olimpia Lombardi, Juan Camilo Martínez González & Sebastian Fortin (eds.), *Philosophical Perspectives in Quantum Chemistry*. Dordrecht: Springer Nature, Synthese Library, 2023.

Olimpia Lombardi, Sebastián Fortin, Cristian López & Federico Holik (eds.), *Quantum Worlds. Perspectives on the Ontology of Quantum Mechanics*. Cambridge: Cambridge University Press, 2019.

Olimpia Lombardi, Sebastián Fortin, Federico Holik & Cristian López (eds.), *What is Quantum Information?* Cambridge: Cambridge University Press, 2017.

Claudia Vanney & Olimpia Lombardi (eds.), *Fronteras del Determinismo Científico. Filosofía y Ciencias en Diálogo*. Madrid: Editorial Biblioteca Nueva, 2015.

**c) Papers in journals (selection)**

“Pragmatic realism in chemistry”, *Cogency*, 15 (2023): 104-119.

“Entanglement and indistinguishability: facing some challenges from a new perspective”, *Philosophical Transactions of the Royal Society A*, 381 (2023): #20220101.

“On the ontological status of molecular structure: is it possible to reconcile molecular chemistry with quantum mechanics?” (in collaboration with Sebastian Fortin and Martín Labarca), *Foundations of Science*, 28 (2023): 709-725.

“Quasi-set theory: a formal approach to a quantum ontology of properties” (in collaboration with Federico Holik, Juan Pablo Jorge, and Décio Krause), *Synthese*, 200 (2022): #401.

“How different interpretations of quantum mechanics can enrich each other: the case of the Relational Quantum Mechanics and the Modal-Hamiltonian Interpretation” (in collaboration with Juan Sebastian Ardenghi), *Foundations of Physics*, 52 (2022): #64.

“Possibility and time in quantum mechanics” (in collaboration with Sebastian Fortin and Marías Pasqualini), *Entropy*, 24 (2022): #249.

“Entanglement and indistinguishability in a quantum ontology of properties” (in collaboration with Sebastian Fortin), *Studies in History and Philosophy of Science*, 91 (2022): 234-243.

“Is the problem of molecular structure just the quantum measurement problem?” (in collaboration with Sebastian Fortin), *Foundations of Chemistry*, 23 (2021): 379-395.

“Modal interpretations of quantum mechanics” (in collaboration with Dennis Dieks), *Stanford Encyclopedia of Philosophy* (Winter 2021 Edition), Edward N. Zalta (ed.), on line.

“Two-step emergence: The Quantum Theory of Atoms in Molecules as a bridge between quantum mechanics and molecular chemistry” (in collaboration with Chérif Matta and Jesús Jaimes Arriaga), *Foundations of Chemistry*, 22 (2020): 107-129.

“The Frauchiger-Renner argument: A new no-go result?” (in collaboration with Sebastian Fortin), *Studies in History and Philosophy of Modern Physics*, 70 (2020): 1-7.

Alberto Cordero, Olimpia Lombardi & Ana Rosa Pérez Ransanz, “Philosophy of science in Latin America” (in collaboration with Alberto Cordero and Ana Rosa Pérez Ransanz), *Stanford Encyclopedia of Philosophy* (Spring 2020 Edition), Edward N. Zalta (ed.), on line.

“The correspondence principle and the understanding of decoherence” (in collaboration with Sebastian Fortin), *Foundations of Physics*, 49 (2019): 1372-1393.

“The Frauchiger-Renner argument and quantum histories” (in collaboration with Marcelo Losada and Roberto Laura), *Physical Review A*, 100 (2019): # 052114.

“A new chapter in the problem of the reduction of chemistry to physics: the Quantum Theory of Atoms in Molecule” (in collaboration with Jesus Jaimes Arriaga and Sebastian Fortin), *Foundations of Chemistry*, 21 (2019): 125-136.

“Distinguishing between inter-domain and intra-domain emergence” (in collaboration with María José Ferreira Ruiz), *Foundations of Science*, 24 (2019): 133-151.

“Why molecular structure cannot be strictly reduced to quantum mechanics” (in collaboration with Juan Camilo Martínez González and Sebastian Fortin), *Foundations of Chemistry*, 21 (2019): 31-45.

“No communication without manipulation: a causal-deflationary view of information” (in collaboration with Cristian López), *Studies in History and Philosophy of Science*, 73 (2019): 34-43.

“What does ‘information’ mean in Integrated Information Theory?” (in collaboration with Cristian López), *Entropy*, 20 (2018): 894-912.

“Understanding decoherence as an irreversible process” (in collaboration with Sebastian Fortin), *International Journal of Quantum Foundations*, 4 (2018): 247-267.

“Let us build better boats. An answer to Jeffrey Seeman’s «Moving beyond insularity in the history, philosophy, and sociology of chemistry»” (in collaboration with Sebastian Fortin and Juan Camilo Martínez González), *Foundations of Chemistry*, 20 (2018): 261-264.

“Histories in quantum mechanics: distinguishing between formalism and interpretation” (in collaboration with Marcelo Losada), *European Journal for Philosophy of Science*, 8 (2018): 367-394.

“A new application of the modal-Hamiltonian interpretation of quantum mechanics: the problem of optical isomerism” (in collaboration with Sebastian Fortin and Juan Camilo Martínez González), *Studies in History and Philosophy of Modern Physics*, 62 (2018): 123-135.

“Interpretation and decoherence: a contribution to the debate Vasallo & Ensfeld vs Crull” (in collaboration with Sebastian Fortin), *Foundations of Physics*, 47 (2017): 1423-1427.

“The relationship between chemistry and physics from the perspective of Bohmian mechanics” (in collaboration with Sebastian Fortin and Juan Camilo Martínez González), *Foundations of Chemistry*, 19 (2017): 43-59.

“Modal interpretations of quantum mechanics” (in collaboration with Dennis Dieks), *Stanford Encyclopedia of Philosophy* (Spring 2017 Edition), Edward N. Zalta (ed.), on line.

“About the concept of quantum chaos” (in collaboration with Ignacio Gómez and Marcelo Losada), *Entropy*, 19 (2017): 1-30.

“What is quantum information?” (in collaboration with Federico Holik and Leonardo Vanni), *Studies in History and Philosophy of Modern Physics*, 56 (2016): 17-26.

“Isomerism and decoherence” (in collaboration with Sebastian Fortin and Juan Camilo Martínez González), *Foundations of Chemistry*, 18 (2016): 225-240.

“What is Shannon information?” (in collaboration with Federico Holik and Leonardo Vanni), *Synthese*, 193 (2016): 1983-2012.

“Deflating the deflationary view of information” (in collaboration with Sebastian Fortin and Cristian López), *European Journal for Philosophy of Science*, 6 (2016): 209-230.

“A pluralist view about information” (in collaboration with Sebastian Fortin and Leonardo Vanni), *Philosophy of Science*, 82 (2015): 1248-1259.

“Measurement, interpretation and information” (in collaboration with Sebastian Fortin and Cristian López), *Entropy*, 17 (2015): 7310-7330.

“The role of symmetry in the interpretation of quantum mechanics” (in collaboration with Sebastian Fortin), *Electronic Journal of Theoretical Physics*, 12 (2015): 255-272.

“Quantum mechanics: ontology without individuals” (in collaboration with Newton da Costa), *Foundations of Physics*, 44 (2014): 1246-1257.

“Linking chemistry with physics: Arguments and counterarguments”, *Foundations of Chemistry*, 16 (2014): 181-192.

“Partial traces in decoherence and in interpretation: What do reduced states refer to?” (in collaboration with Sebastian Fortin), *Foundations of Physics*, 44 (2014): 426-446.

“Decoherence: A closed-system approach” (in collaboration with Mario Castagnino and Sebastian Fortin), *Brazilian Journal of Physics*, 44 (2014): 138-153.

“A modal ontology of properties for quantum mechanics” (in collaboration with Newton da Costa and Mariano Lastiri), *Synthese*, 190 (2013): 3671-3693.

“Stuff versus individuals” (in collaboration with Lucía Lewowicz), *Foundations of Chemistry*, 15 (2013): 65-77.

“The relationship between microevolution and macroevolution, and the structure of the extended synthesis” (in collaboration with Guillermo Folguera), *History and Philosophy of the Life Sciences*, 34 (2012): 539-559.

“Modal interpretations of quantum mechanics” (in collaboration with Dennis Dieks), *Stanford Encyclopedia of Philosophy* (Winter 2012 Edition), Stanford University, USA, 2012.

“Prigogine and the many voices of nature”, *Foundations of Chemistry*, 14 (2012): 205-219.

“Compatibility between environment-induced decoherence and the modal-Hamiltonian interpretation of quantum mechanics” (in collaboration with Juan Sebastián Ardenghi, Sebastián Fortin and Mario Castagnino), *Philosophy of Science*, 78 (2011): 1024-1036.

“The Modal-Hamiltonian Interpretation of quantum mechanics as a kind of "atomic" interpretation” (in collaboration with Juan Sebastián Ardenghi), *Physics Research International*, 2011 (2011): #379604.

“Foundations of quantum mechanics: decoherence and interpretation” (in collaboration with Juan Sebastián Ardenghi, Sebastián Fortin and Martín Narvaja), *International Journal of Modern Physics D*, 20 (2011): 861-875.

“Modal-Hamiltonian interpretation of quantum mechanics and Casimir operators: the road to quantum field theory” in collaboration with Juan Sebastián Ardenghi and Mario Castagnino), *International Journal of Theoretical Physics*, 50 (2011): 774-791.

“On the autonomous existence of chemical entities” (in collaboration with Martín Labarca), *Current Physical Chemistry*, 1 (2011): 69-75.

“Matters are not so clear on the physical side” (in collaboration with Mario Castagnino), *Foundations of Chemistry*, 12 (2010): 159-166.

“Why orbitals do not exist?” (in collaboration with Martín Labarca), *Foundations of Chemistry*, 12 (2010): 149-157.

“The central role of the Hamiltonian in quantum mechanics: decoherence and interpretation”, *Manuscrito. Revista Internacional de Filosofía*, 33 (2010): 307-349**.**

“The modal-Hamiltonian interpretation and the Galilean covariance of quantum mechanics” (in collaboration with Mario Castagnino and Juan Sebastián Ardenghi), *Studies in History and Philosophy of Modern Physics*, 41 (2010): 93-103.

“Is the decoherence of a system the result of its interaction with the environment?” (in collaboration with Mario Castagnino and Sebastián Fortin), *Modern Physics Letters A*, 25 (2010): 1431-1439.

“The effect of random coupling coefficients on decoherence” (in collaboration with Mario Castagnino and Sebastián Fortin), *Modern Physics Letters A*, 25 (2010): 611-617.

“Suppression of decoherence in a generalization of the spin-bath model” (in collaboration with Mario Castagnino and Sebastián Fortin), *Journal of Physics A: Mathematical and Theoretical*, 43 (2010): # 065304.

“Quantum mechanics: modal interpretation and Galilean transformations” (in collaboration with Mario Castagnino and Juan Sebastián Ardenghi), *Foundations of Physics*, **39 (2009): 1023-1045.**

“The global non-entropic arrow of time: from global geometrical asymmetry to local energy flow” (in collaboration with Mario Castagnino), *Synthese*, **169 (2009): 1-25**.

“Towards a definition of the quantum ergodic hierarchy: ergodicity and mixing” (in collaboration with Mario Castagnino), *Physica A*, 388 (2009): 247-267.

“The role of the Hamiltonian in the interpretation of quantum mechanics” (in collaboration with Mario Castagnino), *Journal of Physics. Conferences Series*, 28 (2008): # 012014.

“A general theoretical framework for decoherence in open and closed systems” (in collaboration with Mario Castagnino, Sebastián Fortin and Roberto Laura), *Classical and Quantum Gravity*, 25 (2008): # 154002.

“A modal-Hamiltonian interpretation of quantum mechanics” (in collaboration with Mario Castagnino), *Studies in History and Philosophy of Modern Physics*, 39 (2008): 380-443.

“The arrow of time: from universe time-asymmetry to local irreversible processes” (in collaboration with Mario Castagnino and Matías Aiello), *Foundations of Physics*, 38 (2008): 257-292.

“The end of the dream of unity” (in collaboration with Martín Labarca), *Current Science*, 94 (2008): 438-439.

“A general conceptual framework for decoherence in closed and open systems” (in collaboration with Mario Castagnino and Roberto Laura), *Philosophy of Science*, 74 (2007): 968-980.

“Non-integrability and mixing in quantum systems: on the way to quantum chaos” (in collaboration with Mario Castagnino), *Studies in History and Philosophy of Modern Physics*, 38 (2007): 482-513.

“The philosophy of chemistry as a new resource for chemistry education” (in collaboration with Martín Labarca), *Journal of Chemical Education*, 84 (2007): 187-192.

“Irreversibilidad y pluralismo ontológico” (in collaboration with Martín Labarca), *Scientiae Studia. Revista Latinoamericana de Filosofia e História da Ciencia*, 5 (2007): 139-167.

“The ontological autonomy of the chemical world: A response to Needham” (in collaboration with Martín Labarca), *Foundations of Chemistry*, 8 (2006): 81-92.

“Time-reversal, irreversibility and arrow of time in quantum mechanics” (in collaboration with Mario Castagnino and Manuel Gadella), *Foundations of Physics*, 36 (2006): 407-426.

“The classical limit of non-integrable quantum systems, a route to quantum chaos” (in collaboration with Mario Castagnino), *Chaos, Solitons and Fractals*, 28 (2006): 879-898.

“Self-induced decoherence and the classical limit of quantum mechanics” (in collaboration with Mario Castagnino), *Philosophy of Science*, 72 (2005): 764-776.

“Time’s arrow and irreversibility in time-asymmetric quantum mechanics” (in collaboration with Mario Castagnino and Manuel Gadella), *International Studies in the Philosophy of Science*, 19 (2005): 223-243.

“The ontological autonomy of the chemical world” (in collaboration with Martín Labarca), *Foundations of Chemistry*, 7 (2005): 125-148.

“Decoherence time in self-induced decoherence” (in collaboration with Mario Castagnino), *Physical Review A*, 72, (2005): #012102.

“Dretske, Shannon’s theory and the interpretation of information”, *Synthese*, 144 (2005): 23-39.

“Los enfoques de Boltzmann y de Gibbs frente al problema de la irreversibilidad” (in collaboration with Martín Labarca), *Crítica. Revista Hispanoamericana de Filosofía*, 37 (2005): 39-81.

“What is information?”, *Foundations of Science*, 9 (2004): 105-134.

“Self-induced decoherence: A new approach” (in collaboration with Mario Castagnino), *Studies in History and Philosophy of Modern Physics*, 35 (2004): 73-107.

“The generic nature of the global and non-entropic arrow of time and the double role of the energy-momentum tensor” (in collaboration with Mario Castagnino), *Journal of Physics A* (*Mathematical and General*), 37 (2004): 4445-4463.

“En defensa de la autonomía ontológica del mundo químico” (in collaboration with Martín Labarca), *Diálogos*, XXXIX (2004): 51-70.

“The direction of time: From the global arrow to the local arrow” (in collaboration with Mario Castagnino and Luis Lara), *International Journal of Theoretical Physics*, 42 (2003): 2487-2504.

“The self-induced approach to decoherence in cosmology” (in collaboration with Mario Castagnino), *International Journal of Theoretical Physics*, 42 (2003): 1281-1299.

“The global arrow of time as a geometrical property of the universe” (in collaboration with Mario Castagnino and Luis Lara), *Foundations of Physics*, 33 (2003): 877-912.

“The cosmological origin of time-asymmetry” (in collaboration with Mario Castagnino and Luis Lara), *Classical and Quantum Gravity*, 20 (2003): 369-391 (paper included among the Highlights 2002-2003 of the journal).

“El problema de la ergodicidad en mecánica estadística”, *Crítica. Revista Hispanoamericana de Filosofía*, 35 (2003): 3-41.

“¿Es la mecánica clásica una teoría determinista?”, *Theoria. Revista de Teoría, Historia y Fundamentos de la Ciencia*, 17 (2002): 5-34.

“Caos, ergodicidad e internalismo”, *Revista Latinoamericana de Filosofía*, XXVIII (2002): 7-33.

“Observación e información”, *Analogía Filosófica*, 15 (2001): 29-60.

“La teoría del caos y sus problemas epistemológicos”, *Revista de Filosofía*, LVII (2001): 91-109.

“Los aportes de Prigogine a la biología y a las ciencias sociales”, *Revista Patagónica de Filosofía*, 1(2000): 67-96.

“La interpretación de la irreversibilidad: Prigogine versus Gibbs”, *Diálogos*, XXXV (2000): 37-56.

“Prigogine y el azar de las bifurcaciones”, *Revista de Filosofía de la Universidad de Costa Rica*, XXXVIII (2000): 53-63.

“Teoria del caos: caos en ciencia y en filosofia”, *Revista de Filosofía* (Universidad Iberoamericana)(en colaboración con Narciso Benbenaste), 33 (2000): 360-387.

“Aristotelian physics in the teaching of science: A historical-philosophical approach”, *Science & Education. Contributions from History, Philosophy and Sociology of Science and Mathematics*, 8 (1999): 217-239.

“¿Qué son los objetos del *Tractatus*?”, *Revista de Filosofía* (Universidad Complutense), XII (1999): 55-76.

“El fin de la omnisciencia: la respuesta de Prigogine al problema de la irreversibilidad”, *Theoria. Revista de Teoría, Historia y Fundamentos de la Ciencia*, 14 (1999): 489-510.

“Prigogine y la reducción en ciencias”, *Cadernos de História e Filosofia da Ciência*, 9 (1999): 123-145.

“El problema de la irreversibilidad: Prigogine y la transformación del panadero”, *Revista Latinoamericana de Filosofía*, XXV (1999): 69-86.

“Prigogine: ciencia y realidad”, *Crítica. Revista Hispanoamericana de Filosofía*, XXX (1998): 47-75.

“La teoría del caos y el problema del determinismo”, *Diálogos*, XXXIII (1998): 21-42.

“La construcción del tiempo en Russell”, *Revista Latinoamericana de Filosofía*, XXIII (1997): 211-237.

“La pertinencia de la historia en la enseñanza de ciencias: argumentos y contraargumentos”, *Enseñanza de las Ciencias*, 15 (1997): 343-349.

**c) Book chapters (selection)**

“The relative nature of open quantum systems”, in Michael Cuffaro and Stephan Hartmann (eds.), *The Open Systems View: Physics, Metaphysics and Methodology*, Oxford: Oxford University Press, forthcoming.

“Bohmian Mechanicsfor quantum chemistry” (in collaboration with Sebastian Fortin), in Andrea Oldofredi (ed.), *Guiding Waves in Quantum Mechanics*, Oxford: Oxford University Press, forthcoming.

“Following Earman’s time direction heresy: From the global arrow of time to local irreversible processes”, in Olimpia Lombardi and Cristian López (eds.), *The Arrow of Time: From Local Systems to the Whole Universe*, Cambridge: Cambridge University Press, forthcoming.

“Quantum ontology: Non-individual bundles of possible properties and the role of symmetry” (in collaboration with Hernán Accorinti), in José Acacio de Barros, Federico Holik, and Décio Krause (eds.), *Distinguishing Indistinguishabilities: Differences Between Classical and Quantum Regimes*, Dordrecht: Springer-Synthese Library, forthcoming

“Determinismo y temporalidad”, in Cibelle Celestino Silva (ed.), *30 Anos do Grupo de História, Teoria e Ensino da Ciencias*, Universidade de Sao Paulo, forthcoming.

“Pluralist realism: Where onticity and practice meet”, in Endla Lõhkivi (ed.), *Volume in Honor of Rein Vihalemm*, Bloomington: Indiana University Press, 2023, forthcoming.

“Not individuals, nor even objects: On the ontological nature of quantum systems”, in Jonas Arenhart and Raoni Arroyo (eds.), *Non-Reflexive Logics, Non-Individuals, and the Philosophy of Quantum Mechanics. Essays in Honour of the Philosophy of Décio Krause*, Dordrecht: Springer-Synthese Library, 2023, pp. 47-62.

“A Kantian-rooted pluralist realism for science”,in Cristian Soto (ed.), *Current Debates in Philosophy of Science: In Honor of Roberto Torretti*, Dordrecht: Springer-Synthese Library, 2023, pp. 77-95.

“Chapter 2: Entropy and Time” (in collaboration with Cristian López), in Willi Freeden y M. Zuhair Nashed (eds.), *Frontiers in Entropy Across the Disciplines*, Singapore: World Scientific, 2023, pp.19-53.

“Coarse-graining and the Quantum Theory of Atoms in Molecules” (in collaboration with Chérif Matta), in Olimpia Lombardi, Juan Camilo Martínez González, and Sebastian Fortin (eds.), *Philosophical Perspectives in Quantum Chemistry*, Dordrecht: Springer-Synthese Library, 2022, pp. 217-241

“The many faces of Shannon information” (in collaboration with Cristian López), in Chris Meyns (ed.), *Information and the History of Philosophy*, London: Routledge, 2019, pp. 324-340.

“The Modal-Hamiltonian Interpretation: measurement, invariance and ontology”, in Olimpia Lombardi, Sebastián Fortin, Cristian López, and Federico Holik (eds.), *Quantum Worlds. Perspectives on the Ontology of Quantum Mechanics*, Cambridge: Cambridge University Press, 2019, pp. 32-50.

“Space-time symmetries in quantum mechanics” (in collaboration with Cristian López), in Olimpia Lombardi, Sebastián Fortin, Cristian López, and Federico Holik (eds.), *Quantum Worlds. Perspectives on the Ontology of Quantum Mechanics*, Ca,bridge: Cambridge University Press, 2019, pp. 269-293.

“A closed-system approach to decoherence” (in collaboration with Sebastian Fortin), in Olimpia Lombardi, Sebastián Fortin, Cristian López, and Federico Holik (eds.), *Quantum Worlds. Perspectives on the Ontology of Quantum Mechanics*, Cambridge: Cambridge University Press, 2019, pp. 345-359.

“About the concept of information” (in collaboration with Sebastian Fortin),inOlimpia Lombardi, Sebastián Fortin, Federico Holik, and Cristian López (eds.), *What is Quantum Information?*, Cambridge: Cambridge University Press, 2017, pp. 9-34.

“Information, communication and manipulability” (in collaboration with Cristian López), in Olimpia Lombardi, Sebastián Fortin, Federico Holik, and Cristian López (eds.), *What is Quantum Information?*, Cambridge: Cambridge University Press, 2017, pp. 53-76.

“Mathematical theory of information (Shannon)”, in Luciano Floridi (ed.), *The Routledge Handbook of Philosophy of Information*, London: Routledge, 2016, pp. 30-36.

“A top-down view of the classical limit of quantum mechanics” (in collaboration with Sebastian Fortin), in Ruth E. Kastner, Jasmina Jeknić-Dugić, and George Jaroszkiewicz (eds.), *Quantum Structural Studies: Classical Emergence from the Quantum Level*, Singapore: World Scientific, 2016, pp. 435-468.

“Particles in a quantum ontology of properties” (in collaboration with Dennis Dieks), in Tomasz Bigaj y Christian Wüthrich (eds.), *Metaphysics in Contemporary Physics (Poznan Studies in the Philosophy of the Sciences and the Humanities)*, Leiden: Brill-Rodopi, 2016, pp. 123-143.

“The ontological autonomy of the chemical world: facing the criticisms”, in Eric Scerri and Lee McIntyre (eds.), *Philosophy of Chemistry: Growth of a New Discipline (Boston Studies in the Philosophy and History of Science)*, Dordrecht: Springer, 2015, pp. 23-38.

“Modal interpretations and consecutive measurements” (in collaboration with Juan Sebastián Ardenghi and Martín Narvaja), in Vassilios Karakostas and Dennis Dieks (eds.), *EPSA 2011: Perspectives and Foundational Problems in Philosophy of Science*, Dordrecht: Springer, 2013, pp. 207-217.

“A Kantian perspective for the philosophy of chemistry” (in collaboration with Mariana Córdoba), in Jean-Pierre Llored (ed.), *The Philosophy of Chemistry: Practices, Methodologies, and Concepts* (con Preface of Roald Hoffmann), Cambridge: Cambridge Scholars Publishing, 2013, pp. 478-490.

“T-invariance, irreversibility, arrow of time: similar but different”, in Roberto de Andrade Martins, Guillermo Boido, and Victor Rodríguez (eds.), *History and Philosophy of Physics in the South Cone*, London: College Publications, 2013, pp. 93-125.

“The problem of identifying the system and the environment in the phenomenon of decoherence” (in collaboration with Sebastián Fortin and Mario Castagnino), in Henk W. de Regt, Stephan Hartmann, and Samir Okasha (eds.), *EPSA Philosophy of Science: Amsterdam 2009*, Dordrecht: Springer, 2012, pp. 161-174.

“Different domains, the same problems” (in collaboration with Martín Narvaja and Mariana Córdoba), in Samuel Pintuck and Colin Reynolds (eds.), *Philosophy of Science*, New York: Nova Science, 2012, pp. 67-87.

“The problem of irreversibility, from Fourier to Chaos theory: The trajectory of a controversy space”, in Oscar Nudler (ed.), *Controversy Spaces. A model of scientific and philosophical change*, Amsterdam: John Benjamins Publishing Company, 2011, pp. 77-102.

“The modal-Hamiltonian interpretation of quantum mechanics: physical relevance and philosophical implications” (in collaboration with Sebastian Fortin, Mario Castagnino, and Juan Sebastián Ardenghi), in Jonathan P. Groffe (ed.), *Quantum Mechanics*, New York: Nova Science, 2010, pp.1-64.

“A global and non entropic approach to the problem of the arrow of time” (in collaboration with Mario Castagnino), in Albert Reimer (ed.), *Spacetime Physics Research Trends. Horizons in World Physics*, New York: Nova Science, 2005, pp. 74-108.

“Time asymmetry as universe asymmetry” (in collaboration with Mario Castagnino), in Orazio Descalzi, Javier Martínez, and Sergio Rica (eds.), *Instabilities and Nonequilibrium Structures IX*, Dordrecht-Amsterdam: Kluwer Academic Publishers, 2004, pp. 11-15.

“Determinism, internalism, and objectivity”, in Harald Atmanspacher and Robert Bishop (eds.), *Between Chance and Choice: Interdisciplinary Perspectives on Determinism*, Thorverton: lmprint-Academic, 2002, pp. 75-87.