

Roberto Casati

Curriculum vitae

(2025.05)

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Affiliation

Director, Institut Jean Nicod, Paris

Directeur de recherche de Classe Exceptionnelle (Tenured senior researcher) with the French CNRS

Directeur d'études (Professor), EHESS

Member elected, *Academia Europaea*.

Institut Jean Nicod

Department of Cognitive Studies

CNRS-EHESS-ENS

Pavillon Jardin, Ecole Normale Supérieure

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Born Milan, Italy, on 9 nov 1961. Married. Three daughters.

Bi-national (French-Italian)

Précis

I am a tenured senior researcher (Directeur de Recherche Classe Exceptionnelle) with the French Centre National de la Recherche Scientifique (CNRS) and Professor (Directeur d'Etudes) at EHESS where I hold the chair *Philosophies of the Ocean*. I am based in Paris, France. I studied with Andrea Bonomi and Giovanni Piana in Milan, Italy, where I obtained my PhD (on Events) in 1992, and under the direction of Kevin Mulligan at the University of Geneva, Switzerland (PhD on Secondary Qualities, 1991). I have worked on various research projects on metaphysics and the philosophy of perception. I have been visiting professor or visiting scholar at State University of New York at Buffalo, at the Università IUAV, Venice, at the University of Turin, at Columbia University, and at Dartmouth College. I am the recipient of various prizes and of grants from several institutions, including CNRS, MENRT, and the European Commission.

I have published on journals such as *Analysis*, *Proceedings of the Aristotelian Society*, *Studia Leibnitiana*, *Journal of Aesthetics and Art Criticism*, *Perception*, *Trends in Cognitive Science*, *Journal of Visual Language and Computing*, *Dialectica*, *Australasian Journal of Philosophy*, *Philosophical Studies*, *Philosophical Psychology*, *Behavioral and Brain Sciences*, *Ecological Psychology*, *Journal of Vision*, *PLoS One*, *Scientific Reports*. This somewhat nonstandard spread reflects my interdisciplinary interest, focused on the status of commonsense notions of *entities in space* (such as that of object, event, colors, sounds, holes and shadows, and marine spaces) and the proper methodology for studying these notions. Having received a parallel education as a graphic designer, I have investigated issues in the cognitive study of art and of cognitive artifacts. I worked mostly in analytical metaphysics at the interface with the cognitive sciences (non-standard cognitive objects, events, sounds, spaces), the study of shadow related perceptual phenomena, and the theory of cognitive artifacts. The current strand of my research is related to environmental issues, in particular representations of the ocean, navigation, and observation practices.

Main research results are:

In general philosophy:

The conceptual negotiation account of philosophy; a set of methodological caveats on the cognitive study of art; the conversational theory of artworks; reconceptualizations of the ocean.

In analytical metaphysics:

The event theory of sounds (with J. Dokic), the immaterial theory of spatial regions (with A. Varzi), an extended study of the relationships between part/whole structures and topological structure (with A. Varzi), the theory of future shrinking in the metaphysics of time (with G. Torrenço),

In the study of shadow related phenomena:

The architecture of the shadow cognition system via the study of systematic double dissociations in shadow depictions (accurate shadows that appear wrong, wrong shadows that appear quite correct), the discovery or prediction of a number of illusions related to shadow perception (copycat illusion, Lippi illusion, double shadow illusion, shadow capture, shadow of shadow, shadow occlusion, shadow polarization, size from shadows), a general account of the way shadows are dealt with in artistic representation and geometrical reasoning in astronomy (a book on the subject has been translated in eight languages), and a study of the role of art in revealing the architecture of the visual system (with P. Cavanagh.)

In the study of cognitive artefacts:

The first formal semantics for maps, the demonstration of the topic-sensitive nature of spatial reasoning and formalization (with A. Varzi), the proof of necessity of maximality on top of uniform connectedness in descriptions of entry units for perception, syntax and semantics for standard music notation, a theory of micro-credits in scientific publications; a theory of cognitive advantages of representational artifacts; the Four Modes account of the interaction between brain and cognitive artifacts, the first account of disorientation as a metacognitive feeling (with P. Fernandez-Velasco), an account of navigation as instrumental negotiation.

In the study of marine spaces:

A study of the ocean as an alien place, and a number of proposals for reconceptualizing it (unionizing planctonic entities, leveraging scale effects, de-territorializing the sea, volumizing and dynamizing sea representations); the definition of indexes for assessing equilibria in land-sea-power; a philosophical account of the boat; reconceptualizations of water for domestic use; a philosophy of sea-coast interfacing; a cognitive explanation of etak stars and in general of imaginary objects in navigation practices.

Teaching and research positions

Present positions :

(from 2018) Director, Institut Jean Nicod, Paris.

(from 2002): Senior Researcher (Directeur de Recherches, Tenured Position), Centre National de la Recherche Scientifique, France. (Previously: Tenured Research Fellow, CNRS, as from 1993.)

(from 2016) Professor (Directeur d'Etudes cumulant), Ecole des hautes études en sciences sociales, Paris, France, Chair Philosophies de l'Océan (Philosophies of the Ocean)

1988-90 Research Fellow, Swiss National Science Foundation. Project "Philosophy of Perception" (director Kevin Mulligan, University of Geneva).

1991- 1994 Assistant, University of Neuchâtel, Switzerland.

1991-1993 Research Fellow, Swiss National Science Foundation. Project on the "Formal-Ontological Foundations of A.I. Research" (director Barry Smith, Schaan).

1994 (Spring) Research Associate Professor at CREA, Ecole Polytechnique, Paris.

1994 (Summer) Faculty Member, First International Summer Institute in Cognitive Science, SUNY at Buffalo.

1996 (November) Visiting Professor, Department of Geoinformation, Technical University, Vienna.

1996-present Faculty Member, Cognitive Science Postgraduate Program (CogMaster), Ecole des Hautes Etudes en Sciences Sociales, Ecole normale supérieure, Paris.

1998 (Fall), Visiting Research Professor, State University of New York at Buffalo.

1999 (Fall), Visiting Research Professor, State University of New York at Buffalo.

2000, (Fall) Visiting Scholar, Department of Psychology, University of Arizona, Tucson.

2001 (Fall), Visiting Research Professor, State University of New York at Buffalo.

2001 (Fall), Visiting Scholar, Columbia University, New York.

2001-2003, Teaching at Ecole Normale Supérieure, Paris.

2003 (Fall), Visiting Professor, University of Turin (Italy).

2004-2008, Visiting Research Professor, Istituto Universitario di Arti Visive, Venezia.

2008-2009, Visiting Professor, University of Turin (Italy).

2010 (Fall), Visiting Research scholar, Columbia University

2010-2013 Chargé de Mission, Direction Générale de la Recherche et de l'Innovation, Ministère de la Recherche

2013-2014, Visiting Scholar, Leslie Center for the Humanities and Philosophy Department, Dartmouth College

2015-2016, Teaching at ENSCI, Paris.

2015-2016, Visiting Professor, University of Turin, Italy.

2016-2018, Teacher (Sciences Cognitives) STRATE Design School, Sèvres.

2019 (Spring), Visiting Research Fellow, Columbia University.

2021 (Spring), Visiting Professor, Université de Neuchâtel, Switzerland

2024 (Spring), Visiting Fellow, Columbia University

Education

1980. Liceo Scientifico Alessi, Perugia. Diploma di maturità, Grade 60/60 cum laude.

1980/85 Student at the State University of Milan, Italy.

1985, B.A. in Philosophy. B.A. Thesis on *Logical Spaces*. Grade: 110/110 cum laude.

1980/82 Polytechnic School of Design, Milan, Italy.

1982, B.A. in Visual Design.

1987-1991 Doctoral student, University of Geneva.

1988 Thesis: *Three Studies in the Theory of Perception: Stumpf, Hofmann, Schapp.*

1991 M.A. Thesis: *Secondary Qualities: Metaphysical and Phenomenological Distinctions.*

1991, Ph.D. Thesis on: Secondary Qualities. Thesis supervisor: Kevin Mulligan. (Qualità secondarie) defended on Dec. 21, 1991, Université de Genève. Grade: Très honorable (highest grade in Switzerland). Viva's committee: Prof. J. Bouveresse (Paris), Prof. K. Mulligan (Genève), Prof. D. Marconi (Turin), Prof. R. de Monticelli (Genève).

1989-1992 Doctoral student, State University of Milan, Italy.

Ph.D. Thesis on *Events* defended on 16 September 1992. Thesis supervisor: Andrea Bonomi (Milan).
(Grade: pass; Only pass/fail grade)

Languages

Fluent in English, French and Italian (mother tongue). Proficient in spoken and written German. Passive knowledge of Spanish.

Grants

- 1986 Grant from the Italian Department of Foreign Affairs and the Goethe Institute, Germany.
- 1987/88 Grant from the Italian Department of Foreign Affairs for one year's study at the University of Geneva.
- 1988/1989 Grant from the Society for Swiss and Italian Study Grants for one year's study at the University of Geneva.
- 1989-1992 Three-year grant for Doctoral studies, State University of Milan, Italy.
- 1989-1990, Grant from Fonds National Suisse pour la Recherche Scientifique, Université de Genève
- 1990-1991, Grant from Fonds National Suisse pour la Recherche Scientifique, Schaan.
- 1996 (May-June) NATO Collaborative Research Grant, Columbia University, New York. Project on the Foundations of Spatial Representation (USD 6000).
- 1998 CNRS APN Grant: The Interface between Perception, Action and Conceptualization (120K FF), with Elisabeth Pachierie.
- 1999 MENRT Cognitive Grant: Format of Spatial Representations (100K FF), with Catherine Thinus-Blanc (Marseille).
- 2000 MENRT Cognitive Grant: The role of recognition in pictorial representation (100K FF).
- 2003 Rockefeller Foundation, Grant for 1 month stay at the Bellagio site, for work with Alvin Goldman.
- 2003 EUROPEAN COMMISSION, VI Framework Programme, 4-year grant as a part of the ENACTIVE Network of the IST (200k Euros). (www.enactivenetwork.org)
- 2006 PRIN Simulazione Mentale, dir by A. Voltolini.
- 2008 TGE ADONIS Grant "Outils innovants de traitement numérique pour la valorisation et la diffusion des données" (with Gloria Origgi, Institut Nicod) (17k euros)
- 2008 EUROPEAN COMMISSION, VII Framework Programme, 3-year grant as part of the Liquid Publications Group (with Gloria Origgi, Institut Nicod) (350k euros)
- 2012 Grant BQR "Renaissance" of Ecole Normale Supérieure for the construction of a database on shadows in Renaissance paintings (15k euros)
- 2016 grant IRIS PSL Création, cognition et société 2016-2017, on Design: Cognitive Foundations (10k euros).
- 2016 Grant PSL Lettres, sciences humaines et sociales, économie, finances et gestion 2016-2017, project DIAL (Institut Nicod-ENSAD-NYU Abu Dhabi). (10k euros)
- 2016 (participant in) ANR Grant DEV TOOLS (dir. A. Farné, U864 INSERM Espace et Action).
- 2019 (participant in) ANR Grant EEC – Education à l'Esprit Critique (directed by N Gauvrit, EPHE)
- 2016-2019 Parcours connectés, Investissement d'avenir E-Fran, 2016-2019, with Franck Ramus/LSCP (>100k euros)
- 2018 Disorientation Remediation PSL-NYU (with Goffredo Puccetti) (4,5k euros)
- 2018 Map Semantics PSL-Columbia (With Achille Varzi) (4,5k euros)
- 2019 Knowledge in the Wind (fonds de la recherche, EHESS, 5k euros)
- 2020 Le cahier AtWork (Scripta PSL, 5k euros)
- 2020 The AtWork Notebook (CARNOT Cognition, 5k euros)
- 2020 Observations des Océans et Science Participative (CNRS-MITI, 10k euros)
- 2020 Disorientation and the Covid Crisis (ANR, 75k euros)
- 2021 Eelisa community, on conceptual engineering (PSL, 10k euros)
- 2022 (participant in) BioOcean5D, on marine biodiversity (EU H2020, 150k euros/ PhD equivalent 36M).
- 2022 Perceptions of marine biodiversity (Fondation 2050, 10k euros)
- 2023 (participant in) Mediverseaty, on sea literacy (EU MSCA, 450k euros, 2 PhD students)

Prizes

1990, Geneva University Neumann Prize in Philosophy.

1996 CNRS Bronze Medal in Philosophy for 1996 (awarded to the most distinguished young researcher of the year for philosophy).

2000 Nomination to the *Cortina-Ulisse Prize* for popular science for the book *La scoperta dell'ombra*.

2000 Winner of the *Premio Fiesole Speciale* for nonfiction, for the book *La scoperta dell'ombra*.

2001 Winner of the *Premio Castiglioncello di Filosofia*, for the book *La scoperta dell'ombra*.

2003 Winner of the *Prix de la Science du Livre*, for the book *La découverte de l'ombre*.

2017 Member elected, *Academia Europaea*.

2018 Winner of the *ITAS prize* for *La lezione del freddo*.

2018 Winner ex-aequo of the *Procida Elsa Morante Prize* for *La lezione del freddo*.

2022 Finalist for the Premio Costa Smeralda, for *Oceano*.

2023 Finalist for the Marettica prize, for *Oceano*

Distinguished lectures

Commencement address, IUSS Pavia, Academic year 2016-2017.

Commencement address, University of Trento, Academic Year 2018-2019

Kanizsa Lectures, Trieste 2019.

Teaching

1990-1994 University of Neuchâtel, Department of Philosophy:

(teaching given in French; advanced courses for undergraduates) 1990/1, Winter term: *Events, Substances and States of Affairs*. Spring term: *Philosophy of Action*. 1991/2, Winter term: *Possible Worlds: The Interpretation of Modal Language*. Spring term: *Theories of Reference*. 1992/3, Winter term: *Introduction to Modal Logic* (at the Logic Department); *Music: Sounds and Emotions* (with Christine Tappolet). Spring term: *The Nature of Mental Content: Internalism and Externalism*. 1993/4 Winter term: *Holism*. Spring term: *Philosophy of Perception*

1994 First International Summer Institute in Cognitive Science, SUNY at Buffalo. Course on the *Philosophy of Perception*

1995 Bolzano International Schools in Philosophy and Artificial Intelligence. Course on *Spatial Entities* (with Achille C. Varzi)

1996 (November) Guest Professor, Technical University, Vienna. Course on *The Metaphysics of Dependent Entities*

1996 (December) Cognitive Science Postgraduate Program, Ecole des Hautes Etudes en Sciences Sociales, Paris. Introductory Course on *Classical Logic*

1997 (October) Cognitive Science Postgraduate Program, Ecole des Hautes Etudes en Sciences Sociales, Paris. Introductory Course on *Classical Logic*

1999 (Fall) State University of New York at Buffalo. Two courses co-taught with Barry Smith: *Introduction to Cognitive Science* and *Problems in Ontology: The Metaphysics of Spatial Entities*.

2001 (Fall) State University of New York at Buffalo. Two courses: *Ontology and Cognition* and *Problems in Ontology: The Metaphysics of Spatial Entities* (the latter co-taught with Barry Smith).

2002 (Spring) Cognitive Science Postgraduate Program, Ecole des Hautes Etudes en Sciences Sociales, Paris. Course on *Ontologie et cognition*.

2002 (Spring) Ecole Normale Supérieure, Paris. Séminaire *La droite, la gauche et la nature de l'espace*, co-taught with Jérôme Dokic and Elisabeth Pacherie.

2002 (Fall) Institut Nicod, Université Paris 4, Università del Piemonte Orientale, organiser of the *Summer Course on Ontology*, Certosa di Pontignano, Siena.

2003 (Spring), Institut Nicod, Université Paris 4, Università del Piemonte Orientale, organiser of the *Jackendoff Seminar*

2003 (Spring) Cognitive Science Postgraduate Program, Ecole des Hautes Etudes en Sciences Sociales, Paris. Course on *Ontologie et cognition*.

2003 (Spring) Ecole Normale Supérieure, Paris, Magistère de Philosophie. Séminaire *Introduction à la philosophie de l'esprit*, co-taught with Jérôme Dokic and Elisabeth Pacherie.

2004 (Fall) University of Turin. Course on *Art and Cognition*.

2004 (Spring) Cognitive Science Postgraduate Program, Ecole des Hautes Etudes en Sciences Sociales, Paris. Course on *Ontologie et cognition*.

2004 (Spring) Organiser of the CNRS Summer School *Reference to Objects* (teachers: F. Recanati, D. Povinelli, P. Bloom, Z. Pylyshyn), co-financed by CNRS, RESCIF, European Science Foundation and MSH.

2005 (Spring) Université de Fribourg, Switzerland, course on *Philosophy and cognition*.

2005-2008 (Spring) Istituto Universitario di Arti Visive, Venice, Italy, course on *Color perception*. (4 years, Spring semesters)

2006 (summer) Co-organiser (with A. Barberousse) CNRS Summer School *The Cognitive Foundations of Scientific Images*, funded by CNRS and Fyssen Foundation.

2007-2008 Organisation of a research seminar at Ecole Normale Supérieure, Paris: *The Drawing Lesson*.

2007-2008, Journal Club on *Neural Bases of Consciousness*, co-organised with Patrick Cavanagh and Pierre Jacob, CogMaster EHESS-ENS

2009, Spring, University of Turin, *Ontology and cognition/Ontologia e scienza cognitive*

2011, Spring, Journal Club on *Art and Cognition*, co-organised with Patrick Cavanagh, CogMaster EHESS-ENS

2012 (summer) Co-organiser (with A. Barberousse and A. Voltolini) of the CNRS Summer School: *Images - content, recognition, classification*, Paris July 2012.

2015, Fall, *Ombres*, ENSCI (Ecole Nationale Supérieure de Création Industrielle, Paris).

2016, Spring, University of Turin, *Epistemology of the Cognitive Sciences*.

2011- 2021, *Education, Brain, Cognition*, co-taught with E. Pasquinelli and D. Andler, Cogmaster EHESS-ENS-P5 (in English)

2009-2014, Spring, *Mental representations*, co-taught with Pierre Jacob, Cogmaster EHESS-ENS-P5 (in English).

2016-2018, Fall, *Sciences cognitives*. Strate Design School, Sèvres.

2015-2021, Spring, *The New Mind-Body Problems*, co-taught with Pierre Jacob and Valeria Giardino, Cogmaster EHESS-ENS-P5 (in English).

2016-2018, EHESS Seminar *Education, innovation, Société*, co-taught with L. Aisenberg, D. Andler, F. Cazalis, P. Haag, E. Pasquinelli.

2016-2017, EHESS Seminar *Les artefacts cognitifs*.

2017-2018, EHESS Seminar *Iconicity*

2018-2019, EHESS Seminar *Disorientation : Past, Present, Future*.

2018-2019, EHESS Seminar *Disorientation : Mental maps, paper maps, e-maps*.

2019-2021, EHESS Seminar *Maps, Sketches, Diagrams* (with Valeria Giardino).

2021, Université de Neuchâtel, Cours *Labyrinthes, Boussoles et Cailloux blancs / La désorientation et ses remèdes*.

2020-2025, PSL, EHESS Cours *Climate Change/Changing Behaviors* (with Jean-Pierre Nadal)

2021-present, EHESS Seminar *Philosophies de l'océan*

Services to the profession

Institutional

2019-Present, Director, Institut Jean Nicod

2024- Member of the Core Editorial Team, Plankton Manifesto, UN Compact

2024- Member of the Steering Committee, UN Ocean Decade Coordination Office on Connecting People and the Ocean, Challenge 10

2021- Member of the Scientific Committee of the GDR OMER (Océan et Mers)

2021- Member of the Managing board of the Plankton Planet association, France.

2019-2021 Member of the Scientific Committee of IMERA, Marseille.

2018-2021, Member, Commission Parité, CNRS.

2010-2013 Chargé de mission, Direction générale à la recherche et l'innovation, Ministère de la Recherche, France.

Participation in a number of strategic committees : valuation of humanities, programme H2020, smart indicators for SSH, and the Troisième Plan autisme, among others.

2012-2014 Member of the Scientific Committee of Près Hésam, Paris

2012-2014 Member of the Scientific Committee of ENSCI, Paris

2006-present, Member of the pedagogical committee of the EHESS-ENS-P5 Cogmaster, Paris

2006-2009, member of the PhD committee of the Graduate School "Cerveau, Cognition, Comportement", ENS-P6, Paris

2009-present External member of the committee of the Graduate School in Philosophy, University of Turin, Italy

2000 Co-founder, Institut Jean Nicod

1999-, Member, National Center for Geographic Information and Analysis, State University of New York at Buffalo.

Editorial

1995-2004 Co-founder and managing co-editor of the *European Review of Philosophy*, Stanford, CSLI Publications.

2009-2023 Co-founder and executive co-editor, *Review of Philosophy and Psychology*, Springer.

<http://www.springer.com/13164>

Organization of conferences and workshops

Co-organiser of the European Review of Philosophy workshops for doctoral students in Philosophy: Tübingen (1989), Prague (1990), Milan (1991), Karlovy Vary (1992), Karlovy Vary (1993).

Co-organiser of the workshop *L'action: Ontologie et Intentionnalité* [Action: Ontology and Intentionality] (Neuchâtel, 15-16 Novembre 1991), with Richard Glauser et Daniel Schulthess.

Co-organiser of the *16th International Wittgenstein Symposium, Philosophy and the Cognitive Sciences* (Kirchberg am Wechsel, 15-21 August 1993), with Barry Smith and Graham White.

Co-organiser of the workshop *Esprit, représentation, contexte: externalisme et internalisme* [Mind, Representation and Context: Externalism and Internalism], (Neuchâtel, 20-21 November 1993), with Richard Glauser and Daniel Schulthess.

Area Chairperson for the 11th European Conference on Artificial Intelligence, Amsterdam 1994 (section: "Philosophical Foundations of AI). Member of Programme Committee (section: "Parts and Wholes").

Organiser of the *Art and Cognition Workshop*, Paris, Cognitique, March 2001 (with Jerrold Levinson, Jean-Pierre Cometti, Renaud Brochard)

Organiser of the *Shadow Workshop*, European Society for Philosophy and Psychology, Fribourg. August 2001 (with Jim Enns, Ron Rensink, Pascal Mamassian)

Organiser of the *Category Workshop*, Buffalo, 26-27.10.2001

Organiser of the *Mary Peterson Workshop*, Institut Nicod, June 2001.

Organiser of the *Alvin Goldman Workshop*, Institut Nicod, May 2002.

Organiser of the *Barbara Tversky Workshop*, Institut Nicod, May 2002.

Scientific advisor for the conference *La structure du monde: objets, propriétés, états de choses*, Grenoble, 9-13 Dec. 1999.

Co-organiser (with A. Varzi and K. Mulligan) of the workshop *Minor Entities*, Geneva, July 8-11, 2004

Organiser of the CNRS Summer School on *Reference to objects*, Oleron, June 2004.

Co-organiser (with U. Castiello) of the workshop *Shadow Cognition*, Venice, 25 November 2005.

Co-organiser (with A. Barberousse) of the CNRS Summer School *Cognitive Foundations of Scientific Images* (Roscoff, June 2006).

Area chair for the *Enactive06* conference, Montpellier, November 2006.

External member of the Programme Committee of the 2nd Conference of the Société de Philosophie des Sciences, Geneva, March 2007.

Co-organiser, with Iolanda Pensa, of the workshop Access to Knowledge (A2K), Bellagio, Rockefeller Foundation, 5-9 October 2009

Co-organiser (with A. Barberousse – Université de Lille) of the CNRS Summer School on *Images: Content, Recognition, Classification*. Paris, July 1-5, 2012.

Organiser of the symposium “Liberté, égalité, fraternité”, on the digital revolution, Mantova, FestivalLetteratura, Sep 3 – Sep 6, 2014.

Co-organiser (with P. Santos - Centro Universitario da FEI – Sao Paolo, BR and P. Cavanagh - Paris Descartes University, FR) of the Dagstuhl Seminar 15192 *The Message in the Shadow: noise or knowledge?*, May 3rd – May 8th 2015

Co-organiser (with Barbara Carnevali and Emanuele Coccia, EHESS) of the workshop “Quel visage pour une théorie du design?” Institut Nicod, 21/11/2016.

Co-organiser (with Fabrizio Tonello, Université de Padoue) of the workshop: Le design institutionnel: Les barrières électorales. Paris, Institut Nicod, April 28, 2017.

Co-organiser (with M. Di Francesco, dean, IUSS Pavia) of the PaviPari workshop on the *Design of Mathematical Notation*. Pavia, IUSS, May 5, 2017

Organiser of the workshop *Drawing Challenges*. Paris, Institut Nicod, June 1-2, 2017.

Organiser of the Hutchins Masterclass, Paris, October 3rd, 2018.

Organiser of the “Is cognition still in the wild?” workshop, Paris, October 4th, 2018.

Co-Organiser (with A. Varzi) of two workshops on “Map Semantics” (Paris, June 2018, New York, April 2019.)

Co-organiser (With Evan Josselin and Jade Nijman) of the PSL Week “Blue Horizons” (Paris, March 2025).

Advisory

Member of the Advisory Board of the journals *Facta Philosophica*, *The Monist*, *Rivista di Estetica*, *Sistemi Intelligenti*, *Cognitive Semiotics*, *Applied Ontology*, *Iris*, *Philosophical Inquiry*.

Referee for the journals *Cognition*, *The Monist*, *Synthese*, *Australasian Journal of Philosophy*, *British Journal for the Philosophy of Science*, *Noûs*, *Mind*, *Dialectica*, *Attention Perception and psychophysics*, *Journal of Philosophical Research*, *Children Development Research*, *Perception*, *Journal of Advertising*, *Seeing and Perceiving*.

Referee for COSIT (International Conference on Spatial Information Theory), 1997-

Referee for FOIS (Formal Ontology in information Science), 2004-present

Scientific Committee of the conferences: Enactive07, Enactive 08

Scientific Committee: Société pour la philosophie des sciences

Member, Scientific Committee, CenSes center for the Study of the Senses (<http://thecenses.org/members/>)

Member, Scientific Committee, Exhibit “La science frugale” (Espace Pierre-Gilles de Gennes, Paris), Jan-Sep 2017.

Member, Scientific Committee, LabSchool Network

Evaluation

Evaluator for the VI Framework Programme of the European Commission

Evaluator for the European Science Foundation

Invited Expert to the *New and Emergent Science and Technology* consortium, European Commission

Evaluator for the Italian Ministry of Research and Education

Evaluator for the French Agence Nationale de la Recherche

Evaluator for the Association Française d'Histoire Economique (2016)

Evaluator for EHESS, Paris (2016-present).

Leisure

Piano playing, chamber music. Drawing. Hiking.

Sailing/Permis hauturier, 2015. Major achievements:

Dec 20th, 2016-Jan 5, 2017: Transat retour, >2100 nautical miles from St. Martin (Caribbeans) to Horta (Açores), on Albatros, one of the celebrated Challenge 67 sailboats (no autopilot, no furling jib/mainsail), as part of a crew of 5 + DMM captain and DMM second. Totalling 45 three-hour watches separated by six-hour off duty periods. That's the "wrong way" and "wrong period" Transat.

Nov 24th, 2019-Dec 10th, 2019, Transat ARC, 2700 nautical miles from Gran Canaria to St. Lucie (Caribbeans), once more on Albatros. Ten crew members + DMM captain and DMM second. Arrived 11th in 200 boats, 2nd in Category B. Realized a time lapse movie of the full crossing.

Publications

Books for the general public

Casati, R., 2017, *La lezione del freddo* [Lessons from the cold]. Torino: Einaudi, 177pp.

A memoir and some philosophical lessons concerning climate change. The book was awarded the Premio Itas (Tento 2018) and ex-aquo the Procida Elsa Morante Prize 2018.

Casati, R. Varzi. A.C., 2017, *Semplicemente diaboliche*. 100 nuove storie filosofiche [Simply Diabolical. 100 New Philosophical Stories], Rome, Laterza Editore (I Robinson / Letture), vi + 224 pp.

A follow up to Casati and Varzi 2004.

Casati, R. 2006 *Il caso Wassermann e altri incidenti metafisici*. Roma:Laterza.

A series of *comtes philosophiques* on the astonishment of the subject of thought experiments; characters who travel through time, or only exist on a written page, or only exist for an instant, try to tell us the desperate loneliness of their existence, suspended between abstraction and disenchantment.

- Spanish translation: Madrid, Alianza Editorial.

Casati, R. Varzi, A.C., 2006 *Il pianeta dove scompaiono le cose* (The Planet of Disappearing Things). Torino: Einaudi.

A philosophical book for children.

Casati, R. Varzi, A.C., 2004, *Semplicità insormontabili* (Insurmountable Simplicities, 39 Philosophical Conundrums, in Italian). Roma: Laterza Editore (Quality Paperbacks 22, 194 pp. (ISBN 88-420-7304-4).

Italian edition: Semplicità insormontabili. 39 storie filosofiche, Roma, Laterza Editore, 2004, 194 pp. (ISBN 88-420-7304-4)

Paperback edition: 2006 (ISBN 88-420-7965-0)

Reprinted with a preface by Armando Massarenti: Milano, Il Sole 24 Ore Cultura, 2007, 202 pp. (ISBN 9-77186-380379)

French translation by Pierre-Emmanuel Dauzat: 39 Petites histoires philosophiques d'une redoutable simplicité, Paris, Albin Michel, 2005, 205 pp. (ISBN 2-226-15561-9)

Paperback edition: 2008 (ISBN 978-2-253-08390-0)

Korean translation by Hyunkyung Lee: 논쟁의 대가들 · 역설과 위트 논리와 상상력의 39 가지 철학우화, Seoul, Yoldacrim Publishing, 2005, 264 pp. (ISBN 89-90989-11-6)

e-book edition: 2005 (ISBN 105-81-99961)

Portuguese translation by Maurício Santana Dias: Simplicidades insolúveis. 39 histórias filosóficas, São Paulo, Companhia das Letras, 2005, 192 pp. (ISBN 85-35907-49-1)

Greek translation by Leonidas Balasopoulos: Ακατανίκητες απλότητες. 39 φιλοσοφικές ιστορίες, Athens, Ekdoseis Tou Eikostou Protou, 2006, 198 pp. (ISBN 960-8219-43-4)

Spanish translation by Josefa Linares de la Puerta: 39 (simples) cuentos filosóficos, Madrid, Alianza Editorial, 2007, 240 pp. (ISBN 978-84-206-6154-4)

Chinese translation by Hsu Yuan-Chen: 難解的簡單 · 39 杯哲學 Espresso, Taiwan, Athena Press, 2007, 227 pp. (ISBN 986137079X)

Polish translation by Anna Fraś and Aleksandra Maderak: Proste sytuacje nie do rozwiązania. 39 opowiadań filozoficznych, Kraków, Wydawnictwo Znak, 2008, 186 pp. (ISBN 978-83-240-1014-1)

Japanese translation to appear (Tokyo, Bungei Shunju)

A collection of dialogues, epistles, and imaginary documents illustrating the problems of philosophy that hide behind the wrinkles of daily life. What is there? Why can't we sell our car to X and its pieces to Y? Do strawberries taste the same for everybody? What is the difference between right and left? Is time travel possible? Could it be of any use? Is the train we took today the same we took yesterday? Is everything interesting?

Theatre adaptation, Directed by Natalie Glick, All Gone theatre Company, New York, Fringe Festival 2010. www.insimplicitiesplay.com

Academic books

Casati, R., 2024, *The Cognitive Life of Maps*. Cambridge, Mass: MIT Press. ISBN 978-0262547086. Open Access edition <https://mitpress.mit.edu/9780262547086/the-cognitive-life-of-maps/>

What is a map, that a human brain can use it for understanding a territory and navigating in it? Building on the map semantics provided in Casati and Varzi 1999, the book shows how maps systematic spatial structure supports the automaticity of assignment and hypergenerativity of their interpretation, which in turn support our ability on drawing situated (navigational) and non situated (geographical) inferences about the territories maps represent. The theory of maps advocated here allows us to make fine distinctions and reconceptualizations in the class of cognitive artifacts that are map-like. In particular, physical models, clockfaces and numerals are treated as maplike; pictures are maps of the distribution of visual information.

Casati, R., 2022, *Oceano: Una navigazione filosofica*. Torino: Einaudi ISBN 978-8806252441. Revised French edition: *La Philosophie de l'Océan*. Paris: Presses Universitaires de France ISBN 978-2130842033.

Is the ocean a philosophical object? More than a hostile environment, an alien environment; the negative image of our terrestrial adaptive environment; image of otherness; space of freedom; indifferent to territorial conquest; only partially regulated by laws; inhabited by a fauna and a flora offering "biological services" (from carbon capture, to the foundation of the food chain); repository of mineral and fishing resources; unitary in regional difference; barrier to the movement of people but also space of passage and bridge between civilizations; vector of colonization; challenge for orientation; engineering challenge; cartographic challenge. Lacking a human community of reference, invested by different communities with often conflicting interests, understood only recently in its physical and biological dynamics, the ocean has been conceptualized and reconceptualized in the course of human history, and if on the one hand the representations of which it has been the subject have been a reflection of the societies that surround it or that it surrounds, these have also been at the origin of actions and policies that it is imperative today to examine in the context of the Anthropocene.

Finalist of the Costa Smeralda Prize (2022). Finalist of the Maretica Prize (2023).

Casati, R., Cavanagh, P., 2019, *The Visual World of Shadows*. Cambridge, Mass: MIT Press.

We study how the perception of shadows reveals the inner workings of the visual system. Shadows are at once a massive problem for vision—which must distinguish them from objects or material features of objects—and a resource, signaling the presence, location, shape, and size of objects. We draw up an inventory of information retrievable from shadows, showing their amazing variety. We present an overview of the visual system, distinguishing between measurement and inference. We discuss the shadow mission, the work done by the visual brain to parse, and perhaps discard, the information from shadows; shadow ownership, the association of a shadow with the object that casts it; shadow labeling, the visual system's ability to tell shadows from nonshadows; and the shadow concept, our knowledge about shadows as a category. We then apply the theoretical apparatus we have developed for shadows to other phenomena: illumination, reflection, and transparency. Finally, we examine the art of the shadow, paying tribute to artists' exploration of shadow, analyzing a series of artworks (reproduced in color) from a rich art historical corpus.

Casati, R., Girotto V., in progress, *Le soluzioni creative* (Creative solutions). Roma: Laterza. (currently in rework.)

Casati, R., Varzi, A.C., 2014, *L'incertezza elettorale. Che cos'è un voto? Come si contano i voti? E i voti contano davvero?* Roma: Aracne Editrice.

A discussion of the so-far neglected issue of voting systems whose error margin is smaller than the difference between candidates highlights some aspects of voting as a process submitted to physical and cognitive constraints.

Casati, R., 2013, *Dov'è il sole di notte?* Milano: Cortina.

An innovative attempt at teaching elementary astronomy by the use of cognitive strategies such as changes in point of view and counterfactual reasoning.

Casati, R., 2013, *Contro il colonialismo digitale* (*Against digital colonialism*). Bari: Laterza 2013. French ed. Expanded, *Contre le colonialisme numérique*, Paris, Albin Michel (sept. 2013). Spanish edition, *Elogio del papel*, Ariel, 2014. Catalan Edition, *Elogi del paper*, Pol·len Edicions, 2022.

Why certain items, such as voting, the book or the classroom, are not fit for the unconditional migration to the digital world.

Casati, R. *Prima Lezione di Filosofia*. Roma: Laterza. (April 2011; second edition, May 2012). Open access English Edition: *Philosophy as Conceptual Negotiation*. <https://hal.science/hal-03937758v1>

A characterization (and a defense) of philosophy as an activity of conceptual negotiation. ("[Book of the Month](#)" of *L'Indice*, May 2011).

Casati, R., 2003, *The shadow club*. New York: Knopf. Originally *La scoperta dell'ombra / The discovery of the shadow*, Milan, Mondadori, 2000.). Reprinted as *Shadows*, New York: Vintage. English translation by Abigail Asher.

A study of the role of shadows (holes in light) in scientific discovery, pictorial representation, and psychology.

The book has been awarded the *Premio Fiesole Speciale* 2000, the *Premio Castiglione della Filosofia* 2001, has been nominated for the Cortina Ulisse 2000 prize in popular science, has been awarded the *Prix de la science se livre* 2003.

Translations in Dutch (Amsterdam : De Bezige Bij, 2001, tr. Jan Gunning), French (Paris : Albin Michel, 2002, tr. Pierre-Emmanuel Dauzat), German (Berlin : Berlin Verlag, 2001, tr. Barbara Schaden) , Portuguese (São Paulo : Companhia das Letras, 2001, Tr. Eduardo Brandão) Spanish (Madrid : Debate 2001, tr. Atilio Pentimaldi) and Greek (Ekdoseis).

Casati, R. Varzi, A.C., 1999, *Parts and Places: Structures in Spatial Representation*, Cambridge, Mass.: The MIT Press/Bradford Books, ca. 200 pp. E-book edition: Boulder, CO: NetLibrary, 2000.

An investigation in the foundations of spatial representation, with emphasis on the underlying metaphysical and cognitive underpinnings. Central in our study is the philosophical question of the relationship between an entity and 'its' space, and between a spatial region and the events that take place there. In the light of this, we analyse some of the notions that can be used as primitives in a spatial representation system and we investigate how the choice of any of these primitives would heavily condition the resulting representation structure. We then investigate connections between spatial primitives and spatial logics

(on one hand) and various fundamental intuitive notions such as localization, occupation, penetrability, and movement (on the other). Some general issues are also examined concerning the possibility of providing a symmetric (or at least analogous) treatment of space and time, both from a formal and from a metaphysical perspective. The volume is structured as an advanced textbook.

[Reviews: M. Ferraris, *Il Sole*, 12/12/1999, p. 32; J.E. Tiles, *Mind*, 2000, 109, 856-863 ; J. E. Tiles in *Mind*, 109: 4 (2000), 856-863 ; Marco Aiello in *Journal of Logic, Language and Information* 10: 2 (2001), 269-272 ; Berit O. Brogaard-Pedersen in *Studia Logica* 69:3 (2001), 442-445 ; Franklin Mason in *Philosophical Review* 110: 3 (2001), 479-481 ; Jeffrey M. Zacks in *Philosophical Psychology* 15:1 (2002), 95-97 ; Peter T. Simons in *Philosophy and Phenomenological Research*. Other booknotes: Gary S. Vasilash, in *Automotive Manufacturing & Production*, October 1999, p.8 ; Scott Wilkerson in *Creative Loafing Atlanta*, November 22, 2000.

Casati, R. Varzi, A.C., 1994, *Holes and Other Superficialities*. Cambridge, Mass.: The MIT Press / Bradford Books, 253 pp. E-book edition: Boulder, CO: NetLibrary, 1999.

We seek to answer two basic questions: do holes exist, and if so, what are they? Holes are among entities that down-to-earth philosophers would like to expel from their ontological inventory. We argue in favor of their existence and explore the consequences of this approach. We examine the ontology of holes, their geometry, their part-whole relations, their identity, their causal role, and the ways we perceive them. Three basic kinds of holes are distinguished. Treating these uniformly as immaterial bodies, we develop a morphology of holes, focusing on how a hole can be filled. Standard topology is proven insufficient to capture the common-sense morphological complexity. A two-object topological account is developed. Holes are parasitic upon the surface of their hosts; they can move, fuse into one another, split; they can be born, develop and die. Finally, we examine how some morphological features of holes are represented in perception, and we argue for a revision of the traditional figure/ground dichotomy. The book includes a formal appendix which axiomatizes the notion of hole, and a rich annotated bibliography. Paperback edition, with a new index, 1995. Chapter II has been reprinted as "Immaterial Bodies" in Steven D. Hales, ed., 1999, *Contemporary Metaphysics*, Belmont: Wadsworth Publishing, 428-435, with some exercise questions by the Editor. The formal appendix to Holes has been incorporated into the project of the Standard Upper Ontology (SUO) Working Group of the The Institute of Electrical and Electronics Engineers. <http://suo.ieee.org/ontologies/Holes.txt>

[Reviews: T. Banchoff, *Nature*, vol. 368, 1994, p. 374; D. and S. Lewis, *Philosophical Review*, vol. 105, 1996, pp. 77-79; D. M. Armstrong, *The Journal of Philosophy*, 93, 1996, 585-86; D. Hofstadter, *Lingua Franca*, February 1996, p. 16; B. Rotman, *Sub-stance*, 1995, 184-86; S.A. Gross, *The Harvard review of Philosophy*, Spring 1994, pp. 76-80; Reference and Research Book News, June 1994, p. 3; R.H. Cormack, *Choice*, September 1994, p. 136; G.S. Vasilash, *Automotive Production*, February 1996, p. 58; *Reviewer's Bookwatch*, February 1996, p. 8; P. Simons, *Philosophy and Phenomenological Research*, 1997.]

Italian translation by L. Sosio, *Buchi e altre superficialità*, Milan: Garzanti, 1996. [Reviews: *Il Mondo*, 14 Sep. 1996, P. Mauri, *La Repubblica*, 16 Sep. 1996; P. Granzotto, *Il Giornale*, 18 Sep. 1996; M. Belpoliti, *Il Manifesto*, 29 Sep. 1996; P. Bianucci, *La Stampa*, 2 and 3 Oct. 1996; U. Eco, *L'Espresso*, 10 Oct. 1996, B. Placido, *La Repubblica*, 30 Oct. 1996; R. Morini, *Il Sole*, 15 Dec. 1996; M. Palmaro, *Il Cittadino*, 18 Dec. 1996; F. Maj, *Il Messaggero*, 4 Jan. 97; S. Modeo, *Corriere della Sera*, 5 Jan. 1997; S. Modeo, *Le Scienze*, Mar. 1997; A. Tagliapietra, *Capital*, Apr. 1997; C. Magris, *Corriere della Sera*, 8 May 1997; E. Vignassa de Regny, *L'Indice*, May 1997.]

Casati, R., Dokic, J., 1994, *La philosophie du son [The Philosophy of Sound]*, Nîmes: Chambon, 211 pp. (In French.)

We discuss the distinction between the sensory modalities; the metaphysics of sounds; and the structure of sound space. We defend a physicalist conception of sounds, without accepting the identification of sounds with sound-waves in the medium. Sounds, we hold, are events in resonating objects. We evaluate the two main accounts of orientation in perceptual space: relationism (the theory that an object's position in the perceptual field is determined only by its relation to other objects) and absolutism (the theory that an object's position in the perceptual field is determined only by intrinsic, non-reducible orientation properties). We then address Strawson's problem of whether the logical space of sounds could be spatial in the full sense of the term. In the Appendix, we discuss the logic of perceptual auditory reports, and show their compatibility with our theory of sounds.

Casati, R., 1990, *L'immagine [Pictures]*. Florence: La Nuova Italia, 175 pp. (In Italian).
http://www.studiumanistici.unimi.it/files/_ITA_/Filarete/144.pdf

I defend a cognitive theory of pictures, according to which the central paradigm of our concept of a picture is the representational picture, i.e., the one which induces recognitional abilities in the perceiver. I show how to classify different pictorial styles in terms of their distance from the paradigm, and I criticize alternative accounts.

Articles and book chapters

Fernandez Velasco, P., Gurchani, U., Perroy, B., Casati, R., 2024, Social and temporal disorientation during the Covid-19 pandemic: An analysis of 3306 responses to a quantitative questionnaire. *British Journal of Psychology*. <https://doi.org/10.1111/bjop.12704>

The societal hallmark of the Covid-19 pandemic was a set of mitigation measures such as lockdowns and curfews. The cognitive impact on the public of the resulting spatial, social and temporal constraints is still being investigated. While pandemic time has been extensively studied and mostly described as slowed down and elongated, opposite experimental patterns across national and social contexts leave open an important explanatory gap in order to understand which factor has been causally fundamental in determining the phenomenology of the crisis. In this paper, we use a quantitative questionnaire developed for measuring temporal and social disorientation on a sample of 3306 respondents during an acute phase of restrictions in France. We show that social disorientation greatly contributed to the temporal disruptions experienced during the pandemic. This result reinforces the importance for public authorities to address the compounding effect of feeling isolated during crises.

Aït Touati, F., Blanc, N., Casati, R., Durand, S., Granjou, C., Martin, N., Mounet, C., Petit, E., Ripoll, T., 2024, Vivre avec les changements climatiques. In: Maljean-Dubois, S., Vermeersch, S., Deboulet, A., *Les sociétés face aux défis climatiques*. CNRS Editions. ISBN 9782271151414, 201-231.

Casati, R., Bourgeois-Gironde, S., Flamme, E., Gallace, A., Hiernaux, Q., Malatesta, S., Schmidt di Friedberg, M., Squarcina, E., de Vargas, C., Wanek, E., 2024, Rethinking the ocean: conceptual engineering for the next 10000 years. In Isaac, M.G., Sharp, K., *New Perspectives on Conceptual Engineering*. NY: Springer.

The ocean constitutes an interesting case study for conceptual negotiation and reconceptualization, in view of its otherness, of the current pressure exerted by anthropic activities on many aspects of oceanic status and life, of new, emerging knowledge about its physical and biological nature, and in particular in view of the need to look for and plan ahead actions on a long time span, measured not in decades, but in centuries and millennia. The present contribution analyzes existing conceptualizations of the ocean that in the current context lean towards misconceptions, and in its programmatic part proposes reconceptualizations that can eventually inform public policies.

Cooper, E.A., Casati, R., Farid, H., Cavanagh, P. (2023). The art of the float. *Journal of Vision*, August 2023, Vol.23, 13. doi: <https://doi.org/10.1167/jov.23.8.13>

For more than 2000 years, artists have exploited cast shadows to influence how objects appear to be positioned in a scene. A *contact cast shadow* can anchor an object to the ground and a *detached cast shadow* can make an object appear to float. However, there is a period of approximately 1000 years when there were virtually no cast shadows in art. How were states of contact versus floating depicted by artists without cast shadows? Here, we survey various techniques used by artists to anchor relative position with and without cast shadows. We then conduct experimental tests of the hypothesized surface attraction principles that underlie these techniques. In the absence of cast shadows, an object (a wooden box) was often seen as resting on a surface as long as that surface offered information about ground orientation and support (a tiled floor). When the ground surface was ambiguous and cloud-like (1/f noise), the box was more likely to be seen to float. The presence of cast shadows made the box appear to contact the ground whether it was well-defined or ambiguous. Both shadows and surface support also increased the accuracy with which participants detected when the box was tilted up from the ground. These results indicate that artists long ago discovered the important power of support relationships to anchor objects to surfaces in the absence of shadows.

Velasco, P.F, Casati, R., Nijman, J. (2023). The cognitive advantages of the notebook. *Cognitive Semiotics*.

Notebooks are widely used in a large number of professional and everyday life contexts; according to market analysis, the global market for paper notebooks has been projected to grow by \$ 16.55 bn during 2021-2025, with a compound annual growth rate of 7%. In education in particular, notebooks of various types are considered as difficult to replace and eco-friendly solutions for note-taking. The notebook has been widely mentioned in the context of distributed cognition (e.g. Giere and Moffatt, 2003), the extended mind hypothesis (e.g. it is the central example in Clark and Chalmers, 1998), and the study of cognitive artefacts (e.g. Heersmink, 2012). Despite its ubiquity and almost paradigmatic status, to date, there is no dedicated analysis of the notebook qua cognitive artefact, to explain its success and its resilience. Our aim is to fill this gap in the literature by studying a set of cognitive advantages of the notebook.

Casati, R., Gurchani, U., (2023). Il mare come territorio: equilibrio, proiezione ed esposizione marina nei Paesi del mondo (English translation: Territorializing the sea: equilibrium, projection and exposure of world countries). *Gnosis*, 2023.01, 100-123.

We are concerned with the territorial interpretation of EEZs in order to highlight the points of balance and imbalance in territorial distribution on a planetary scale. The research node that motivates us is as follows: if the sea is considered as a territory, how do marine territorial divisions reflect the power structures related to terrestrial territorial divisions? What are the balances and imbalances between sea and land? What does it mean to be a maritime power? How does marine extension change the balance? The basic data we consider are a state's land area (non-maritime), its sea area expressed in terms of its EEZ, its population, and the length of its coastline. These data allow us to define certain indices by which we can sort the various forms of expression of "territorial power" (land or sea) and highlight imbalances.

Casati, R., 2023, Pour une philosophie des ports. *Carnets du Paysage*, 42, 66-73.

What is the philosophical status of the land-sea interface? The coastline is a place of exchange, but this is an automatic consequence of the fact that there is land and the sea comes to rub against it. The port is certainly a place of exchange, but it also has a function of exchange. In this, a port is a human place, intrinsically and irreducibly social. The term "natural port" is therefore perhaps an oxymoron, or the result of a geomorphological coincidence. In the port, the land/sea interface reaches an extreme intensity: fragments of land (the ships) break away from the land and go out to sea. For this to happen, the sea must enter the land and become a river or almost a lake. This human aspect then has its own evolution and history, which is the history of human things. If the port is considered as a place and a function, it must be fully recognized that its nature is not only spatial, but also temporal, or rather spatio-temporal. It is not only a place but a place-time, a metaphysically hybrid, if not chimerical entity.

Hyernaux, Q., Bourgeois-Gironde, S., Casati, R., 2023, Aspects éthiques et juridiques des plantes invasives (Ethical and legal issues of invasive plants). *La pensée écologique*, special issue on *La dignité de la créature* +30,

In this article, we first present the theoretical field of plant ethics, which has developed mainly in the last thirty years. We then study the case of invasive plants and the criteria used to define them in the scientific community. We then ask what legal measures apply to these plants and what is their history. Finally, we ask whether the way invasive plants are treated from the perspective of conservation biology and the resulting legal perspective is compatible with the concept of creature dignity. The working hypothesis of this article is that the concept of invasive species is too broad. This can lead to a form of expedient ethics and justice. We therefore argue that invasive plants should be given a fair trial so that their dignity is respected.

Fernandez Velasco, P., Gurchani, U., Perroy, B., Pelletreau-Duris, T., & Casati, R. (2022). Development and validation of a quantitative instrument for measuring temporal and social disorientation in the Covid-19 crisis. *PLoS One*, 2022 Nov 17; 17(11):e0264604. doi: 10.1371/journal.pone.0264604. PMID: 36395100; PMCID: PMC9671314. [Preprint. Public and Global Health. <https://doi.org/10.1101/2022.02.28.22270969>]

We developed a quantitative Instrument for measuring Temporal and Social Disorientation (ITSD), aimed at major crises such as the Covid-19 pandemic. Disorientation has been identified as one of the central elements of the psychological impact of the Covid-19 era on the general public, but so far, the question has only been approached qualitatively. This paper offers an empirical, quantitative approach to the multi-faceted disorientation of the Covid-19 pandemic by operationalising the issue with the help of the ITSD. The ITSD was developed through multiple stages involving a preliminary open-ended questionnaire followed by a coder-based thematic analysis. This paper establishes the reliability and validity of the resulting ITSD using a 3-step validation process on a sample size of 3306.

Fernandez Velasco, P., Perroy, B., Casati, R., & Gurchani, M. U. (2022). Lost in pandemic time: A phenomenological analysis of temporal disorientation during the Covid-19 crisis. *Phenomenology and Cognitive Science*. <https://doi.org/10.1007/s11097-022-09847-1> [Preprint. PsyArXiv. <https://doi.org/10.31234/osf.io/px7st>]

People have experienced many forms of temporal disorientation during the Covid-19 crisis. For this study, we collected a rich corpus of reports on the multifaceted experiences of disorientation during the pandemic. In this paper, we study the resulting corpus using a descriptive approach. We identify six emerging themes: temporal rift; temporal vertigo; impoverished time; tunnel vision; spatial and social scaffolding of time; suspended time. We offer a phenomenological analysis of each of the themes. Based on the phenomenological analysis, we draw a key distinction between episodic and existential forms of temporal disorientation, and we argue that the Covid-19 crisis is best conceptualised as a period of suspended time.

Perroy, B., Velasco, P. F., Gurchani, M. U., & Casati, R. (2022). Temporal disorientation and the Covid-19 crisis: Present episodic confusion, past-oriented sustained disbelief, and future-oriented anxiety are the three main ways in which people were temporally disoriented during the pandemic. *Scientific Reports* 12, 22338 (2022). <https://doi.org/10.1038/s41598-022-25194-2> [Preprint PsyArXiv. <https://doi.org/10.31234/osf.io/k8p5c>]

People facing spatial and social restrictions during the Covid-19 period could report various surprising temporal disruptions, such as time passing slower and faster at once. We investigate the temporal experience of the pandemic through a corpus-based thematic analysis and multiple correspondence analysis of 149 subjective reports in March 2021, during a period of long lasting and ongoing restrictions in France and the UK. We argue that three forms of temporal disorientation constitute a fitting umbrella over a heterogeneous phenomenology. The loss of temporal landmarks made it harder to orient oneself and induced episodic forms of temporal disorientation. Distinctively, sustained temporal disbelief, an existential form of temporal disorientation, could happen when people's past perspective was severely distorted. Finally, a future-oriented form of temporal disorientation whose hallmarks were feelings of anxiety and hopelessness could occur alongside inability to project oneself into the future. Our findings suggest that public authorities should provide future landmarks to those most exposed to temporal disorientation during crises.

Casati, R., Fernandez-Velasco, P., Giardino, V., Pierini, F. & Nijman, J. (2022, February 15) Le design spatial de la vie universitaire en ligne : l'expérience d'un espace virtuel hétérotopique dans une réplique Gather.Town d'un laboratoire de recherche. *Carnet EHESS*. <https://www.ehess.fr/fr/carnet/coronavirus/lorganisation-spatiale-vie-universitaire-en-ligne-lexpérience-dun-espace-virtuel>

A recurring question that arose during the periods of lockdown during the pandemic for those who manage or are part of a multi-person organization, and in which considerable added value comes from teamwork, was: When will we rediscover the conviviality, the informal moments, the hallway conversations, the possibility of opening a door and solving a problem in two minutes instead of writing long emails? The virtual life to which we have become partly accustomed and resigned certainly has advantages that compensate for the loss of interaction, from the reduction of time spent in public transport or traffic jams, to the possibility of creating meetings with people who are geographically distant and whom we usually find difficult to meet. But this compensation comes with a sense of loss, acute in the case of academic activities such as university seminars. We have explored some solutions to compensate for this feeling. One of them is gather.town (GT), which uses a spatial metaphor for social and communicative interactions.

Elder, J., Cavanagh, P., Casati, R., 2022, A Bayesian Account of Depth from Shadow. *Modvis* 2022.

When an object casts a shadow on a background surface, the offset of the shadow can be a compelling cue to the relative depth between the object and the background (e.g., Kersten et al 1996, Fig. 1). Cavanagh et al (2021) found that, at least for small shadow offsets, perceived depth scales almost linearly with shadow offset. Here we ask whether this finding can be understood quantitatively in terms of Bayesian decision theory. Estimating relative depth from shadow offset is complicated by the fact that the shadow offset is co-determined by the slant of the light source relative to the background. Since this is often difficult or impossible to estimate directly, the observer must employ priors for both the relative depth and the light source slant. To establish an ecological prior for relative depth, we employed the SYNS dataset (Adams et al., 2016) and the methods of Ehinger et al (2017) to measure the distribution of relative depths at depth edges near the horizon (Fig. 2). Lacking comparable empirical statistics for illumination slant, we considered two possible distributions: A zero-parameter uniform distribution, and a two-parameter beta distribution. To model the human data, we assumed that the visual system makes use of these priors and the observed shadow offset to minimize expected squared error in perceived relative depth. Fig. 3 shows that while the empirical depth prior brings the model into the range of the human data, a flat illumination prior predicts a more compressive scaling than observed. Fitting a beta distribution to minimize weighted squared deviation between human and optimal depth judgements corrects this deviation, and predicts a broadly peaked distribution over illumination slant, peaking at 37.4 deg away from the surface normal (Fig. 4). We will discuss possible ecological explanations for this illumination prior.

Cavanagh, P., Casati, R., Elder, J., Scaling depth from shadow offset, *Journal of Vision*, (2021) 0(0):07933, 1–9. Doi: /10.1167/jov.0.0.07933

When an object casts a shadow on a background surface, both the offset of the shadow and the blur of its penumbra are potential cues to the distance between the object and the background. However, the shadow offset and blur are also affected by the direction and angular extent of the light source and these are often unknown. This means that the observer must make some assumptions about the illumination, the expected distribution of depth, or the relation between offset and depth in order to use shadows to make distance judgments. Here, we measure human judgments of perceived depth over a range of shadow offsets, blurs, and lighting directions to gain insight into this internal model. We find that distance judgments are relatively unaffected by blur or light direction, whereas the shadow offset has a strong and linear effect. The data are consistent with two models, a generic shadow-to-depth model and a Bayesian model.

Casati, R., 2021, Shadows in the moment. In: Strouhal, E., ed. *Liddy Scheffknecht – points in time*. Berlin: De Gruyter. DOI: 10.1515/9783110769562-010

The interplay between shadows, events, and time, in the work of visual artist Liddy Scheffknecht.

Pasquinelli, E., Farina, M., Bedel, A., Casati, R., 2021, Naturalizing Critical Thinking: Consequences for Education, Blueprint for Future Research in Cognitive Science. *Mind, Brain and Education*, Volume 15, Issue 2, 168-176. DOI: 10.1111/mbe.12286.

While very popular in public discourse about education, critical thinking education is still a work in progress. Two key conditions for successfully addressing critical thinking education are lacking: a) the availability of a clear, specific, and operational definition, and b) a deeper understanding of the natural cognitive bases of critical thinking. We therefore propose a theoretical framework for critical thinking education, grounded on a cognitive approach. Starting from a restrictive characterization of critical thinking—defined as the capacity of evaluating the epistemic quality of information, and of calibrating one's confidence in relationship to it—we identify specific mechanisms subserving critical thinking that are present in early human development. We refer to these mechanisms as the natural building blocks of critical thinking. On this naturalistic ground, effective educational strategies can be envisaged that both harness the natural building blocks of critical thinking and help overcome its shortcomings.

Casati, R., Fasoli, M., 2022, Lego Ontology (submitted).

The article provides an ontology of Lego as an example of a *toy world* that is arguably possible to completely characterize. We distinguish two basic types of LEGO-OBJECTS, i.e. LEGO-ATOMS and LEGO-MOLECULES, and describes how attaching and spatially arranging atoms creates composite objects in the Lego ontology. LEGO-ATTACHMENT is recognized as the primitive and fundamental notion of this ontology, on which the two notions of LEGO CHAIN and LEGO MOLECULE are based. A characterization of LEGO-ATOMS and a characterization of SUB-ATOMIC LEGO-PARTS is provided. The second part of the paper analyses salient spatial properties of LEGO-COLLECTIONS and of LEGO-MOLECULES, and discusses knowledge of Lego by human players.

Fernandez Velasco, P., Perroy, B., & Casati, R., 2021, The collective disorientation of the COVID-19 crisis. *Global Discourse: An interdisciplinary journal of current affairs*, 11(1-2). DOI: 10.1332/204378921X16146158263164.

One of the chief features of the pandemics global crisis is that we find ourselves in a shifting landscape. The resulting disorientation extends beyond health research and into many domains of our individual and collective lives. We suffer from political disorientation (the need for a radical shift in economic thinking), from social disorientation (the rearrangement of social dynamics based on distancing measures), and from temporal disorientation (the warping of our sense of time during lockdown), to name but a few. This generalised state of disorientation has substantial effects on wellbeing and decision making. In this paper, we review the multiple dimensions of disorientation of the COVID-19 crisis and use state-of-the art research on disorientation to gain insight into the social, psychological and political dynamics of the current pandemic.

Casati, R., Varzi, A.C., 2021, Ballot Ontology. In: Sara Bernstein and Tyron Goldschmidt (eds.), *Non-Being: New Essay on the Metaphysics of Non-Existence*, Oxford, Oxford University Press. DOI: 10.1093/oso/9780198846222.003.0009

The U.S. presidential election of 2000 was crucially decided in Florida. And, in Florida, the election hinged crucially on a peculiar sort of question: Does this ballot have a hole? “Yes, it does”, so the ballot is valid and ought to be counted. “No it doesn’t”, and the ballot must be discarded. If only one could tell! Where were the hole experts when we needed them? Eventually the matter was thwarted by the Supreme Court and we all gave up. But we did learn something. We learned that even the destiny of a Presidential Election, if not more, might ultimately depend on one’s criteria for identifying holes—not their material surroundings, which everyone could detect, but the holes themselves.

Casati, R., Kulvicki, J., Zeimbekis, J., 2020, Borgesian Maps. *Analytic Philosophy*. DOI: 10.1111/phib.12204

Borgesian map are full-scale maps that are superposed on the areas they represent. They are often regarded as useless, absurd extensions of mapmaking practice. We argue that they are neither useless nor absurd, and that they are quite common. They are, in fact, the conceptual grounds on which all other mapmaking is built. As such, they tell us some very interesting things about maps, the purposes they serve, and how they serve them.

Casati, R., Fernandez-Velasco, P., 2021, Making and breaking our shared world. A phenomenological analysis of disorientation as a way of understanding collective emotions in distributed cognition. In : Falcato, A., Silva, S., *The Politics of Emotional Shockwaves*. Palgrave.

In this paper, we analyse the phenomenology of disorientation to elucidate the role that emotions play in distributed cognitive processes that involve multiple agents and cognitive artefacts. The feeling of disorientation destabilises our horizon of experience and turns the world around us unfamiliar or alien. This feeling embodies our disconnection to the agents (e.g. walking companions), the cognitive artefacts (e.g. maps) and the environment around us. A proper analysis of the phenomenology of both orientation and disorientation uncovers the role that feelings play in distributed cognitive processes: emotions serve as a form of evaluative regulation that contributes to, on the one hand, the syncing of the different elements of a distributed cognitive process, and on the other, the eventual disengagement of the agent from an unreliable distributed cognitive process

Casati, R., Varzi, A.C., 2020, A Slow Impossible Mirror Picture. *Perception*.

A new type of impossible picture, involving a mirror reflection, is presented and described, whereby an object presents two apparently irreconcilable views when simultaneously seen in its flesh and in a mirror. Contrary to other, more familiar impossible pictures, its interpretation requires explicit reasoning about the represented reality. It is a slow impossible picture.

Pasquinelli, E., M. Farina, M. Bedel, A., Casati, R., 2020, Définir et éduquer l'esprit critique : Rapport produit dans le cadre des travaux du Work Package 1 / Projet EEC -Éducation à l'esprit critique (ANR-18-CE28-0018). https://jeannicod.ccsd.cnrs.fr/ijn_02887414

We provide a characterization of Critical Thinking (CT) that allows to clearly define (1) an educational need and (2) an educational objective. For this purpose, we analyze the literature concerning CT and its different definitions. Within this literature, we identify the elements to be retained for an operational characterization of CT. As the current approaches proved to be unsatisfactory from several points of view, we turned to other approaches, outside the specific literature on CT. We identified a limited number of cognitive mechanisms and functions involved in the (critical) evaluation of information needed for decision-making and in confidence assessment. These functions constitute potential cognitive building blocks of CT and are therefore part of a cognitive approach to CT. These building blocks (1) serve as a basis for evaluating information (first and second hand) and (2) enable the confidence in the information thus evaluated to be adjusted in order to make a decision.

Casati, R., Le Corre, F., 2020, The mereological theory of odors. Preprint, Hal ID jn_02571705. https://jeannicod.ccsd.cnrs.fr/ijn_02571705

We propose the mereological theory of odors, according to which odors are proper parts of concrete objects. We distinguish between object solid core and gaseous periphery; the odor is the periphery and plays a role in olfactory perception similar to the role played by surfaces in visual and tactile perception. Some epistemological and metaphysical consequences of the theory are explored, in particular the fact that objects are larger than they visually appear, and that smell turns out to be more accurate than both vision and touch. In the context of dealing with infectious diseases transmitted by airborne particles, a reconceptualization of odors could be leveraged for inducing better mental representations and protective measures.

Fernández Velasco, P., Casati, R., 2020, Subjective disorientation as a metacognitive feeling, *Spatial Cognition & Computation*, DOI: [10.1080/13875868.2020.1768395](https://doi.org/10.1080/13875868.2020.1768395)

There is a large body of literature on disorientation, ranging from behavioral studies to the analysis of search and rescue operations. However, the subjective side of disorientation remains insufficiently explored and, as a result, there is no unified account of the phenomenon. A working characterization of disorientation is a first step in the direction of this unified account. Through the study of an array of subjective experiences of disorientation, we shall first distinguish between the objective condition of being lost and the subjective condition of disorientation. Our central claim is then that disorientation is a metacognitive feeling. Specifically, we claim that disorientation is a metacognitive feeling of low confidence in the subject's online system of spatial representation.

Fernández Velasco, P., Casati, R., 2020, The many faces of disorientation : a response to Daniel R. Montello *Spatial Cognition and Computation*, DOI : [10.1080/13875868.2020.1772267](https://doi.org/10.1080/13875868.2020.1772267)

A response to Dan Montello's commentary to our 2020 paper.

Latimier, A., Riegert, A., Peyre, H., Ly, S. T., Casati, R., Ramus, F. 2019. Does pre-testing promote better retention than post-testing? *npj Science of Learning*.

Compared to other learning strategies, retrieval practice seems to promote superior long-term retention. This has been found mostly in conditions where learners take tests after being exposed to learning content. However, a pre-testing effect has also been demonstrated, with promising results. This raises the question, for a given amount of time dedicated to retrieval practice, whether learners should be tested before or after an initial exposure to learning content. Our experiment directly compares the benefits of post-testing and pre-testing relative to an extended reading condition, on a retention test 7 days later. We replicated both post-testing ($d = 0.74$) and pre-testing effects ($d = 0.35$), with significantly better retention in the former condition. Post-testing also promoted knowledge transfer to previously untested questions, whereas pre-testing did not. Our results thus suggest that it may be more fruitful to test students after than before exposure to learning content.

Casati, R., 2019, Navigation as instrumental negotiation. *Italian Academy Preprints*, online at: <https://italianacademy.columbia.edu/paper/navigation-instrumental-negotiation>

We describe some instrument-based practices of navigation on the high seas, and we introduce the notion of instrumental negotiation and navigational shortcut. We assess the role of astronomic navigation in second-to-second steering and in wayfinding. We detail a number of observations concerning time, space representation, redundancy as a facilitator, and the modulation of social interactions.

Casati, R., Yasaei, S., 2019. The Philosophy of Time-lapse Movies: Vision makers. In: Merlini, F., Bernardini, R. eds. *The Age of Immediacy on Trial of Meaning. Proceedings of the 2017 and 2018 Eranos Conferences*. Einsiedeln: Eranos Foundation / Daimon. *Eranos Lectures Series*.

We investigate time lapse (TL) cinematographic sequences in their capacity of representational tools that make certain features of a phenomenon visually accessible. We introduce TL as a subcategory of Altered Pace sequences (AP) and discuss analogies and disanalogies of APs with other "vision making" informational and representational artifacts. We introduce some descriptive and explanatory notions, among which the notion of epistemic advantage of TLs, or the notion of pictures' silence, and we assess the role of background knowledge in interpreting silent pictures. We claim that TL movies and, more in general, AP movies, in spite of their analogies with microscopes and telescopes, are representations with no informational equivalent, thus constitute a valuable addition to our epistemic repertoire. If they had an informational equivalent, this would have to include a time machine.

Casati, R., 2019, Can Design Have a Functional Definition? *Raddar*, 1, 142-158.

In this article we address two projects: the definition of design at large and the functionalist approach to the definitory project. We argue that design is, in many a respect, aligned with art, for which a functional definition proves impossible, as art has had many different functions. This allows us to explore the respective normative projects of engineering, art and design, casting some light on the very essence of the design activity.

Casati, R., 2019, Drawing Problems: Thought in Action. In: O. Gapenne, C. Lenay, P. Steiner, Special issue of *Adaptive Behavior* in the honor of John Stewart.

I make the case for a phenomenology-based analysis of the drawing practice, by studying some drawing challenges such as tracing a second line that must match an already traced line. This allows for making a distinction between "mode 1" (fast and fluent) and "mode 2" (slow and planned) aspects of drawing. Some implications for the social insertion of drawing are also made on a case-based set of observations.

Casati, R., Fernandez Velasco, P., 2019, Disorientation and GIS-informed Search and Rescue, in *The Philosophy of Geographic Information Systems*. T. Tambassi, ed.. Cham: Springer, pp. 241-251.

Nowadays, Wilderness Search and Rescue (WiSAR) operations revolve around the creation of probability maps using GIS planning tools (Doherty et al. 2014). Although this method has proven effective, there is a missing link between WiSAR theory and advances in other fields related to disorientation (e.g. psychology and neuroscience). A unified conceptualisation of disorientation is a crucial element for understanding the mind and behaviour of disoriented subjects. The central aim of this chapter is to explore how a unified conceptualisation of disorientation can contribute to GIS-informed WiSAR theory. The paper will open with a review of the work on disorientation coming from different fields, to then introduce the conceptual work that is needed for a unified account of disorientation. We will discuss two different approaches to WiSAR theory: a ring model and a Bayesian model. We end on a discussion on how conceptual work on disorientation and GIS-informed WiSAR theory can help each other advance.

Santos, P., Calabar, P., Casati, R., 2019. The Knowledge of Knots: An Interdisciplinary Review. *Spatial Cognition and Computation*, 19:4, 334-358.

Knots can be found and used in a variety of situations in the 3D world, such as in vines, in the DNA, polymer chains, electrical wires, in mountaineering, seamanship and when ropes or other flexible objects are involved for exerting forces and holding objects in place. Research on knots as topological entities has contributed with a number of findings, not only of interest to pure mathematics, but also to statistical mechanics, quantum physics, genetics and chemistry. Yet, the cognitive (or algorithmic) aspects involved in the act of tying a knot are a largely uncharted territory. This paper presents a review of the literature related to the investigation of knots from the topological, physical, cognitive and computational (including robotics) standpoints, aiming at bridging the gap between pure mathematical work on knot theory and macroscopic physical knots, with an eye to applications and modelling.

Cavanagh, P., Casati, R., Elder, J., 2018, Tight shadows shrink depth. *Journal of Vision* September 2018, Vol.18, 493. doi:10.1167/18.10.493.

When an object casts a shadow on the surface behind it, we get a strong impression of depth separating the object and the rear surface. Kersten and Mamassian (1996) demonstrated this with a cast shadow that moved in and out below a static square, making the square appear to approach and recede in depth. There was no visible light source and the shadow motion could have been caused by a moving light source. Instead, viewers assumed a fixed light and a moving object where the depth of the object scaled with the offset of its shadow. Here we report a particularly strong light source bias in the case of "tight shadows", shadows that have very small offsets from the object casting them, as is often seen with flash photography. The small offset between object and shadow is due to the light source being near the point of view of the observer or camera. However, rather than attributing the tight shadow to the light source location, observers instead attribute it to a very small separation between the object and the rear surface. This bias – "tight shadow equals small separation" – leads to paradoxical impressions of objects impossibly close to their backgrounds. However, it is consistent with the expected object to background separation averaged over all possible light source directions, e.g., lights to the left for right shadows. In this framework, tight shadows are most likely to be caused by shallow relief.

Casati, R., Tonello, F. 2018, "Voto elettronico e partecipazione democratica." in Vitale, E., Cattaneo, F. *Web e società democratica*. Torino: Accademia University Press, 3-15.

Casati, R., Stanovà, M., Roisin, S., 2017, "The pedestrian's Venice". Magazine X, special issue.

The city of Venice looks very different from the point of view of a pedestrian than from the point of view of a sailor. Islands and blocks rarely trace each other; canals and pathways are two independent networks. In this publication we investigate the spatial structure of pedestrians' Venice: we distinguish and taxonomize various types of blocks and provide a series of large scale maps that visualize the contrast between islands and blocks. The publication contains two sets of maps—Venice of today (2017) and Venice of 1729 based on the map of Lodovico Ughi.

Casati, R., 2017, "Shadows, objects and the lexicon: On some lexicalized and non-lexicalized concepts of shadow and light." In C. Mac Cumhaill, Thomas Crowther, eds., *Perceptual Ephemeria*. Oxford: OUP.

We have complex concepts for shadow and light phenomena, but they are not stable.

Santos, P.E, Casati, R. Cavanagh. P. 2017, "Perception, Cognition and Reasoning about Shadows", *Spatial Computation and Cognition*.

Shadows are not only noise, but knowledge that can be exploited by natural and artificial system.

Casati, R., 2017, “Il grande cambiamento dei nostri tempi: L'era digitale.” *Scuola Ticinese*, 327, 17-26.

Exposure to the new information technologies is not creating a generation of mutants.

Casati, R. 2017, “Two, then Four Modes of functioning of the mind: towards a unification of “dual” theories of reasoning and theories of cognitive artifacts.” In J. M. Zacks, H. A. Taylor, eds., *Representations in Mind and World. Essays inspired by Barbara Tversky*. New York : Routledge, 7-23.

The main aim of this contribution is to stabilize and generalize the use of the conceptual labels originating from “dual” theories of reasoning, so as to provide a theoretical unification with theories of cognitive artifacts, and to describe in an abstract way the mechanics of cognitive artifacts. Psychological literature has by and large accepted the distinction between two “systems”, or – as I shall say – two modes of operation of the brain in certain tasks, mainly reasoning and decision making tasks (Evans 2003, 2012, 2015 for reviews; Evans and Frankish 2009; Kahneman 2011). M1 is an automatic, autonomous, stimulus-driven, fast operating mode that delivers rough but locally acceptable results; M2 is modulated by will and attention, operates slowly and stepwise, intensely uses working memory, and is in general more accurate. I shall take the distinction for granted (with some caveats, in particular I shall argue that we do not need to endorse a substantive view of cognitive systems, as opposed to a more neutral talk of modes) and argue for an extension of the conceptualization to cover cases discussed in the literature of cognitive artifacts, with the goal of unifying the two fields. I'll first introduce M4, an operating mode that completely outsources the computations typically run by M1 and/or M2 to external artifacts (for instance, taking verbal directions from a navigation system, “at the intersection, make a right turn” - without even looking at the display). The M4 mode fully delegates mental activity – what I shall dub “core” computational tasks – and only makes its user care about the input and output of the computation. Then I'll vindicate the existence of a Mode 3. The M3 is best understood as occupying an intermediate position between M2 and M4. In the M3 mode we interact with cognitive artifacts and this interaction is both essential to performing a certain task (as opposed to what happens in M1 and M2) and is not an instance of wholesale offload (as opposed to M4). Interactions with cognitive artifacts actually display proprietary computations, that give some hints about the architecture of cognition, and about its flexibility. Flexibility in turns creates room for the activity of designers of cognitive artifacts.

Santos, Paulo E., Casati, R., Schultz, C., Bhatt, M., Dee, H., 2016, “Eclipse in Occlusion: A mereotopological representation of celestial eclipses.” In: *Qualitative Reasoning*, New York. Proc. of the 29th International Workshop on Qualitative Reasoning.

This paper presents a formalisation and exploration of the concept of eclipse from the perspective of qualitative spatial reasoning. Building upon theories of spatial connectivity, occlusion and shadows, we show that eclipses can be described and reasoned about using mereotopological relations, and that these formalisms can be used to disprove some commonsense misconceptions about the nature of celestial phenomena.

Casati, R. 2016, “The Structure of Standard Music Notation”. In: Zaibert, L. ed., *The Theory and Practice of Ontology*. New York: Palgrave Macmillan, 187-201. 10.1057/978-1-137-55278-5_10

Western musicians and musically educated people acquire most of their repertoire through reading musical scores. This paper explores some aspects of the conventions in music notation related to time representation. The paper has two parts. In the first part I provide a characterization of the temporal fragment of Standard Music Notation (SMN). SMN is treated as a formal language; its syntax and semantics are described. The main theoretical notion is that of an invisible “raster” whose abstract properties make the notation possible. Some principles governing the notation are spelled out. In the second part some considerations of cognitive import about the peculiarities of the notation are put forward.

Casati, R., 2016, “Size from Shadow: Some Informational Paths Less Traveled”. *Ecological Psychology*, 28, 1, 1-9.

This article deals with informational structure in cast shadows. Most research on cast shadows has focused on retrieving various geometric properties of the scene from shadow patterns, the shape of objects and distances between objects being the foremost features. Size appears to be a rather neglected aspect. However, shadows contain a wealth of information about size. We explore first a simple heuristic (approximate equivalence of size of shadow and size of object) and some complicating factors: elongated shadows, shadows from pinholes, and penumbra. Finally, we discuss the case of relative size of objects in multiobject scenes with shadows.

Casati, R., 2016, “Cancellabilità. Perché è importante non lasciare tracce”. In: Barbero, C., Andina, T., eds., *Ermeneutica, Estetica, Ontologia*. Bologna: Il Mulino, 173-185.

Traces are a key category in the information age. Should we preserve them indefinitely? I make the case for cancellation, on cognitive grounds.

Casati, R., 2014, “Play It: The Replay Theory of Music Experience”, in Koblížek, T., Kotátko, P., Pokorný, M., *Text + Work*. The Menard Case. Prague: Litteraria Pragensia, 144-152.

I present the replay theory of musical artworks, according to which, when we listen to any performance of a piece of music, we take the piece we listen to as being the very same token, accessed in two different moments in time. I discuss some objections to the theory.

Casati, R., 2014, “Looking at images and reasoning about their content. The case of shadow depiction”. In Taylor, P., ed. Gombrich: *Meditations on a Heritage*. London: Paul Holberton, 139-153.

The target is shadow depiction and the inferential landscape that depicted shadows make possible. By analyzing some subtleties of the depiction of shadows in art, light will be cast on the viability of the larger Gombrichian programme of accounting for depiction and of our complex relationships to representational images.

Casati, R., 2014, "Shadow-related concavity–convexity inversions reveal a very basic tolerance for impossible shadows". *Perception*, volume 43, doi:10.1068/p7727 <http://www.perceptionweb.com/abstract.cgi?id=p7727>

The stimuli traditionally used for demonstrating shadow-related concavity–convexity inversions reveal a very basic tolerance for impossible shadows—namely, self shadows do not induce a visual request for geometrically mandatory cast shadows.

Casati, R., 2014, "Stones, Shadows, Vision". In S. Njami, ed. *The Divine Comedy – Heaven, Purgatory and Hell Revisited by Contemporary African Artists*. Frankfurt a. Main, Museum für Moderne Kunst – Kerber Verlag, 50-65.

A fundamental paradox in the metaphysics of Dante's comedy. Immaterial souls cannot cast shadows, but can interact with physical bodies.

Casati, R., 2014, "Incident Light". In: Larry Kagan, a retrospective. *The Hyde Collection*.

An analysis of the complex relationships between sculptures and light and shadows, through the prism of the work of artist Larry Kagan.

Casati, R., 2014, "Object Perception". In Matthen, M., ed., *The Oxford Handbook of Philosophy of Perception*.

<http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199600472.001.0001/oxfordhb-9780199600472-e-019>

The topic of object perception is different from that of the objects of perception. It is presupposed that we are dealing with extramental items only, be they full three-dimensional objects or two-dimensional stimuli. Object perception is perception of stable three-dimensional entities, a category of items that as a first approximation includes 'middle-sized dry goods'. Such objects have well-defined, slowly and non-discontinuously changing boundaries; they continue to exist through time; they change and move (non-discontinuously). The topic of object perception is then an account of what it is to perceive objects of this type.

Casati, R., Dokic, J., Le Corre, F., 2014, "Distinguishing the Commonsense Senses". In Matthen, M., Stokes, D., Biggs, S., ed. *Perception and Its Modalities*. Oxford University Press, 462-480.

This paper proposes a methodological strategy to investigate the question of the individuation of the senses both from a commonsensical and a scientific point of view. We start by discussing some traditional and recent criteria for distinguishing the senses and argue that none of them taken in isolation seems to be able to handle both points of views. We then pay close attention to the faculty of hearing which offers promising examples of the strategy we pursue of combining commonsense and science. In particular, we argue in favour of a distinction between two kinds of modes of presentation associated with sound perception: a mechanical mode of presentation that makes sounds perceptible by other modalities than audition such as touch and a tonal mode of presentation that makes people conceive of sounds as the proper objects of auditory perception.

Casati, R., Torrenço, G., 2014, "The Identity of Indiscernibles and the Principle of No-co-location". In F. Bacchini, M. Dell'Utri, eds., *Realism and Ontology Without Myths*. Cambridge Scholars Publishing, 101-109.

We propose a revised version of Black's original argument against the principle of identity of indiscernibles. Our aim is to examine a puzzle regarding the intuitiveness of arguments, by showing that the revised version is clearly less intuitive than Black's original one, and appears to be unjustified by our ordinary means of assessment of intuitions.

Bertamini, M., Casati, R. 2014, "Figures and Holes". In Johan Wagemans, ed., *Handbook of Perceptual Organization*. Oxford University Press. DOI: 10.1093/oxfordhb/9780199686858.013.022, pp. 281-293.

This chapter starts with a discussion of the ontology and topology of holes. In the last part of the chapter the focus is on the role of holes in the study of figure-ground organisation and perception of shape.

Casati, R., 2013, "Knowledge of knots: shapes in action". In Kutz, O., Bhatt, M., Borgo, S., Santos, P., *Shapes 2.0: The Shapes of Things*. Workshop held at the World Congress and School on Universal Logic, April 3-4, 2013, Rio de Janeiro, Brazil <http://ceur-ws.org/Vol-1007/proceedings.pdf>, 3-20.

Logic is to natural language what knot theory is to natural knots. Logic is concerned with some cognitive performances; in particular, some natural language inferences are captured by various types of calculi (propositional, predicate, modal, deontic, quantum, probabilistic, etc.), which in turn may generate inferences that are arguably beyond natural logic abilities, or non-well synchronized therewith (eg. *ex falso quodlibet*, material implication). Mathematical knot theory accounts for some abilities - such as recognizing sameness or differences of some knots, and in turn generates a formalism for distinctions that common sense is blind to. Logic has proven useful in linguistics and in accounting for some aspects of reasoning, but which knotting performances are there, over and beyond some intuitive discriminating abilities, that may require extensions or restrictions of the normative calculus of knots? Are they amenable to mathematical treatment? And what role is played in the game by mental representations? I shall draw from a corpus of techniques and practices to show to what extent compositionality, lexical and normative elements are present in natural knots, with the prospect of formally exploring an area of human competence that interfaces thought, perception and action in a complex fabric.

Casati, R., Di Bona, E., Dokic, J., 2013, "The Okhamization of the event sources of sounds". *Analysis*, 73, 3, 1–5. doi:10.1093/analys/ant035

There is one character too many in the triad sound, event source, thing source. As there are neither phenomenological nor metaphysical grounds for distinguishing sounds and sound sources, we propose to identify them.

Casati, R., Sorensen, R., 2013 "Non-physical visual objects generated by color spreading are expected to cast shadows". *Perception*, 41, 1275-1276.

Non-physical visual objects generated by color spreading are expected to cast shadows, and we are surprised at the fact that some of them don't.

Casati, R., Giardino, V., 2013, "Public Representations and Indeterminacies of Perspectival Content", in Z. Kondor, *Enacting Images: Representation Revisited*. Cologne: von Halem Verlag, 111-126.

Perceptual content can vary on both a *factual* and on a *perspectival* dimension. In this article, we apply this distinction to the content of public representations. We discuss some informational indeterminacies and show that they do not threaten the validity of the notion of their perspectival content; indeed, they can help reclassifying public representations, in a way that neatly excludes diagrams from the category of pictures, on the one hand, and accommodates axonometries and pictograms into it, on the other.

Casati, R., 2012, "Some varieties of shadow illusions: split shadows, occluded shadows, stolen shadows, and shadows of shadows". *Perception*, 41, 357-360.

Shadows are visual objects and as such are subject to preference rules for segmenting the visual scene (such as Gestalt laws). These rules govern shadows along two dimensions: their general unity and individuation (e.g., they describe a certain area as a unitary shadow as opposed to a set of two distinct shadows) and their being the shadow of a given object, as opposed to being the shadow of any other object in the scene (the Shadow Correspondence Problem, Mamassian 2004). We describe a few phenomena that indicate the interplay of preferences in determining the final visual aspect of scenes in which shadows are present.

Casati, R. 2012, "Mirrors, Illusions and Epistemic Innocence", in C.Calabi, P. Spinicci, eds., *Perceptual Illusions*. London/ Palgrave, 192-201.

I examine some accounts that articulate the content of perception that occurs by means of a mirror. The defended account entails that a right hand seen in the mirror does not "become" a left hand.

Casati, R., 2011, "Numerals and word sequences". In Reboul, A., ed. *Mind, Values, and Metaphysics, Philosophical Essays in Honor of Kevin Mulligan*, 327-338. 10.1007/978-3-319-05146-8_22

According to (Spelke and Tsivkin 2001) numerals are a linguistic and cognitive bridge between two types of "core" knowledge, that is, subitization of small quantities and approximate representation of large quantities. In this paper I go somewhat their way but I also introduce some apriori constraints on what could constitute a bridge. Such constraints are on the 'design' of a numeral system and on its use. The starting point is the consideration that numerals like 'three' (as well as names of days of the week like 'Friday') are non-standard linguistic items. I propose that their peculiarity is primarily neither a syntactic nor a semantic peculiarity. It is instead in their morphology. Mastering numerals and names for days of the week is assigning them a certain non-standard morphology, whereby any numeral is a mandatorily a non-independent part of a longer sequence. It is hypothesized that this non-standard morphology is associated with a non-standard (at least for language) semantics, i.e. map semantics. In a sense, numerals are an artificial language encroached in natural language. The explanatory advantages of the account are discussed and contrasted with Spelke and Tsivkin's 'bridge' account of the role of numerals in cognition.

Casati, R., Origgi, G., Simon, J., 2011, "Micro-credits in scientific publishing", *Journal of Documentation*, Vol. 67 Iss: 6, pp. 958-974

Background. New technologies allow for efficient dissemination of scientific knowledge objects (SKOs). But they are likely to transform SKOs as well. *Central question.* Considering provisionally the published paper as an *atomic* SKO, we investigate possible subatomic structures of SKOs. We hypothesize that SKOs are meant to satisfy two separated but inter-dependent sets of constraints, one related to the contribution the SKO makes to the body of knowledge, and another related to the contribution the SKO makes to the reputation of its authors. We hypothesize that existing SKO structures are not optimal for satisfying both sets of constraints at once. *Methods.* We look into existing practices of structuring SKOs in different disciplines. *Results.* We propose a way to structure the research SKO that allows for both a clear individuation of the main scientific contributions and a fine-grained structure of credits and of evaluation. *Applications.* Guidelines are offered. This article, including the present abstract, is an example of how the scientific article of tomorrow could look like.

Casati, R. Torrenço, G., 2011, "The not so incredible shrinking future". *Analysis* 71(2): 240-244.

We explore future-shrinkism, the position that is symmetrical to growing-blocks metaphysics of time, and defend its epistemological plausibility.

Casati, R., 2011. "Fenomenologia e scienze cognitive." In De Caro, M., Poggi, S., *Continenti Filosofici. La filosofia analitica e le altre tradizioni*, Roma: Carocci, pp. 139-146.

Three versions of phenomenology (lite, strong, and extrastrong) are discussed, and their relationship to cognitive science is investigated.

Osman, N., Sierra, C., Sabater-Mir, J., Wakeling, J.R., Simon, J., Origgi, G., Casati, R., 2011, "Managing Creative Works in a Digital World". In: *Legal Information and Communication Technologies*, Volume 8, 321-336. European Press Academic Publishing.

This paper proposes a new paradigm for dealing with scientific knowledge in general, and publications in particular. The paradigm aims at changing the way in which knowledge is produced, disseminated, evaluated, and consumed. A formal model is proposed and the issues of credit attribution, copyrights and licensing, which are crucial for the success of any new model, are addressed.

Casati, R., 2010, "Impossible cast shadows in ukyio-e paintings." *CARLS Series of Advanced Study of Logic and Sensibility*, Vol.3, Keio University, 265-268.

A note on the interpretation of some seeming shadows in Japanese paintings.

Bertamini, M. Casati, R., 2010, "False beliefs and naïve beliefs can be good for you". *Behavioral and Brain Sciences*, volume 32, issue 06, pp. 512-513.

Naïve physics beliefs can be systematically mistaken. They provide a useful test-bed because they are common, and also because their existence must rely on some adaptive advantage, within a given context. In the second part of the commentary we ask questions about when a whole family of misbeliefs should be considered together as a single phenomenon.

Casati, R., 2010, "Hallucinatory Pictures". *Acta Analytica*. DOI: 10.1007/s12136-009-0074-0

Hallucinatory pictures are yet to be found picture-like artifacts that induce a hallucination of their content that cannot be intuitively explained by a look at the structure of the pictorial vehicle. Different accounts of depiction make different predictions about the possibility that such artifacts be considered as pictures. Some case are presented that point towards the intuitive acceptability of hallucinatory pictures.

Casati, R., Stanová, M., Roisin, S., 2010, "(Corner)stones of Venice: Targeting the Island Advantage in the Topological Representation of the City."

We investigate the spatial structure of Venice from the viewpoint of the pedestrian, distinguishing and taxonomizing various types of blocks, and contrasting blocks with islands. Pedestrians' Venice has a shape that differs in interesting ways from that of Venice for the sailor. The duality of islands and

blocks is introduced and discussed. An “island advantage” may bias the spatial representation of the structure of the city. We provide a tentative large scale block map of downtown Venice that points to some inferential advantages of a block representation. (The article has been listed in <http://www.radicalcartography.net/?venice>)

Casati, R., Dokic, J., 2009, “Some varieties of Spatial Hearing”, in M. Nudds, C. O’Callaghan, *Sounds and perception: new philosophical essays*, Oxford: Oxford University Press, 97-110.

We provide some meta-theoretical constraints for the evaluation of a-spatial theories of sounds and auditory perception. We point out some forms of spatial content auditory experience can have. If auditory experience does not necessarily have a rich egocentric spatial content (the kind of content that enables the hearer to locate sources in her egocentric space—for instance, to the left and far away), it must have some spatial content for the relevant mode of perception to be recognizably auditory. An auditory experience devoid of any spatial content, if the notion makes sense at all, would be very different from the auditory experiences we actually enjoy. This is enough to dismiss current a-spatial theories of auditory perception. As a consequence, our initial taxonomy of proximal, medial, and distal theories, as well as our phenomenological argument in favor of distal theories, are still topical.

Casati R., 2009, “On Publishing”. *Social Epistemology A Journal of Knowledge, Culture and Policy*, Volume 24 Issue 3, 191.

I discuss the social significance of publication in the life of a scientific knowledge object (SKO). The importance of publication is made evident by the complex issue of unpublication (the strong version of retraction whereby a SKO is completely destroyed). Unpublication is a tempting option in the electronic world. I argue against the viability of unpublication, both on practical and on principled grounds related to the cascading entitlements of published paper.

Casati, R., 2009 “Critical notice of D. Dutton, *The Art Instinct*.” Bloomsbury Press, 2009. Online at www.cognitionandculture.net

The importance of Denis Dutton's book lies in its frank endorsement of two very extreme and controversial theses. The theses are, first, that art is an adaptive cultural phenomenon, one that is rooted in an art instinct, and, second, that this rooting has not only, as one may expect, an explanatory import as to how artworks be or look like, but also normative import as to how artworks should be or look like. I critically examine the grounds for and the consequences of these claims.

Casati, R., 2009, L'uso delle intuizioni in filosofia. *Sistemi Intelligenti*, 2, 335-354.

I assess some recent positions about the role of intuitions in philosophy. I first describe the use of intuitions in mental experiments. Then I discuss philosophers who put great weight on intuitions. I suggest that intuitions can be explananda in the philosophical endeavour alongside other explananda. I propose a typology of existing intuitions. I then introduce the issue of the variability of intuitions and suggest some remedies.

Casati, R., 2010, “Trust, secrecy and accuracy in voting systems: the case for transparency.” *Mind and Society*, 9(1):19–23. DOI: 10.1007/s11299-009-0062-5.

If voting systems are to be trusted, they not only need to preserve both secrecy (if requested) and accuracy, but the mechanisms that preserve these features should be transparent, in the sense of being both cognitively understandable and accessible. Electronic voting systems, much as they promise accuracy in counting, and on top of being criticized for their insufficient protection of secrecy, violate the transparency requirement.

Casati, R., 2009 “Surfaces, holes, shadows”. Ch. 36 of R. Le Poidevin, ed., *Routledge Companion to Metaphysics*, 382-388.

Minor entities provide an interesting testbed for metaphysical theories, but also for investigating the structure of concepts, as their concepts appear to be tributary of different representational systems.

Casati, R., 2009, ‘Does topological perception rest on a misconception about topology?’ . *Philosophical Psychology*, Vol. 22, No. 1, February 2009, 75–79

I discuss the relevance of Chen et. al. findings about “topological perception” in honeybees, in particular that (1) configural, global properties can be considered as primitive perceptual features, and (2) topological features in particular are interesting as they are amenable to formal treatment. I discuss four interrelated questions that bear on any interpretation of findings about the perception of topological properties: what exactly are topological properties, what makes them global, in what sense Chen et al.’s finding makes them primitive, and what are the hopes of a formal theory of perception based upon them. I suggest that mathematical topology is not the correct model for topological properties, hence that some other formalism ought to be used -- a form of “internalized topology”. However, once the principles of this type of topology are spelled out, they may not be as ‘globalistic’ as one may have expected.

Casati, R., 2009 “Die Kunst des Schattenwurfs” (original ms. in English, German transl. by B. Kalthoff), in N. Bätzner, W. Nekes, E. Schmidt, eds. *Blickmaschinen*. Köln: DuMont, 101-106.

Casati, R. 2009 “Are shadows transparent? An investigation on white, shadows and transparency in pictures.” *Res*, 56, 329-335.

Shadow perception and transparency perception appear to use very similar rules, to the point that from the perceptual point of view shadows have been considered an instance of transparent objects. We claim that in spite of the similarities, shadows ought not to be considered transparent entities. The discussion has consequences both for the issue of the location of shadows, and for the conceptualization of transparency, and it provides insight into the inner complexities of the conceptual structure of visual concepts.

Pasquinelli, E., Andler, D., Casati, R. 2008. “Presence and tele-presence in education. A plan for future collaborative research”. The Fifth International Conference on Enactive Interfaces, Pisa.

Casati, R., Varzi, A.C., 2008 “Event Concepts”, in F. Shipley and J. Zacks (eds.), *Understanding Events: From Perception to Action*, New York: Oxford University Press, 31-53.

The concept of an event, and of event representation, is an umbrella notion. We provided an overview of different ways events have been dealt with in philosophy and in linguistics and, to a minor extent, in cognitive science. The variety of positions is construed in part as the result of different descriptive and explanatory projects. In particular, we urge that various types of notion be kept apart: common-sense, theoretically revised, scientific, and internalist psychological notions. The philosophical literature has applied the standard test of making different notions interact; the interactions of the notion of an event with neighboring notions, such as that of an object, of cause, of space and time, have been tested. Results so far are not conclusive. Contextual

effects abound that can pull intuitions in very different directions. And the methodology itself is largely based on material that may be in need of close scrutiny, as it draws from linguistic evidence, non-linguistic intuitions, and sometimes examples from scientific descriptions of the external world.

Casati, R., Pignocchi, S. 2008, "Communication Advantages of Line Drawing", in M.L. Mora Millán, ed. *Cognición & Lenguaje. Estudios en homenaje a José Luis Guijarro Morales*, Servicio de Publicaciones de la Universidad de Cádiz, 75-97.

This paper investigates the cognitive foundations of a pragmatic account of line drawings. It sets to highlight those features of line drawings that make them, as opposed to other types of visual representations, particularly conducive to communication. It is argued that representational and artifactual properties of drawings must be investigated together in order to understand the peculiarities of drawings as communicative tools.

Casati, R., Pignocchi, S., 2007, "Mirror and canonical neurons are not constitutive of aesthetic response", *Trends in Cognitive Sciences*, 11, No. 10. (October 2007), 410.

The alleged neural basis of empathic responses to artworks is only of marginal relevance for aesthetics and for cognitive theories of art, contrary to Gallese and Freedberg.

Casati, R., Roncaglia, G., 2007, "La struttura di uno strumento di scrittura collaborativa per la democrazia partecipata". *Rivista di Estetica*, 36:3, 59-79.

Two approaches to online collaborative writing for the formulation of norms (laws, bills) are discussed: a Wikipedia-like approach and a structured approach.

Casati, R. 2007, "How I managed to Hide My Shadow", *Perception* 36, 1849–1852

A special type of visual stimulus is described which gives the perceiver the impression that a shadow has been hidden behind a surface in the image, contrary to expectations based on ecological situations in which covering a shadow only passes it on to the cover.

Casati, R., 2007 "Che cosa spiega una teoria dell'arte"? ('What does a theory of art explain?' in Italian, in M. Califano, ed. *Paradosi*. Firenze: Leo S. Olschki.

Describing the logical space of artistic theories.

Casati, R., 2007, "The copycat solution to the shadow correspondence problem". *Perception*, 37, 4, 495-503.

Cast shadows (henceforth simply 'shadows') depicted in artworks can fulfill some of their perceptual roles, such as helping the retrieval of 3d structure and of relative positions of objects, without having to be geometrically or physically accurate. The visual system displays a wide tolerance for shadows that are mostly inaccurate, at times making use of the scarce accurate but relevant information that can still be retrieved from them. However, the extent of the tolerable inaccuracy is at present still unexplored. We propose that inaccuracy can be not only totally acceptable but in some cases is even likely to be preferable to accuracy if the main perceptual role of shadows is to help locate in a scene the objects that cast them. We examined a small but effective historical corpus of pictorial endeavours, from which it appears that in some cases painters have used a *copycat strategy* for drawing the terminator of a shadow, i.e. they have produced a replica of the visible profile of the caster, which in the norm yields an impossible shadow. The copycat strategy is perceptually effective for solving the correspondence problem of associating a shadow with its caster, and copycatting can be more effective than other solutions, including the depiction of the geometrically correct shadow. These phenomena provide insight into the computations effectively used by the brain to deal with space perception. In particular, the brain is not relying on some sort of simplified physical model of the world, for the shadows produced by the copycat effect would correspond to a more complicated physical situation than the one encountered in real life.

Casati, R., Pasquinelli, E. 2007 "How can you be surprised? The case for volatile expectations", *Phenomenology and Cognitive Sciences*. 6, 1-2, 171-183.

What is surprise, that it can have a heuristic role? In some experimental settings surprise is explicitly countenanced in measuring subjects' behavioral responses and arguably it can be considered criterial for belief ascription (sections 2-4). The standard explanation of surprise is that it is an emotional reaction to an upset belief; surprise is an epistemologically grounded emotion. Cases in which surprise is reported – in particular, cases of violation of coherence – are discussed (section 5). A distinction between belief and expectation is introduced in order to account for some aspects of surprise; expectations are construed as volatile representations that tie belief to action (section 6). Surprise as invoked by Dennett concerns what he calls 'ideological' commitments; this is a subclass of all the beliefs whose upsetting gives rise to surprise behavior; how do we isolate this class? (section 7) Can lack of surprise provide a complementary heuristic for attributing epistemic states? (section 8). Finally, we shall suggest that surprise provides subjects with some sort of direct phenomenological access to their subpersonal doxastic states (section 9).

Casati, R. 2007 "Les décisions souterraines entre intuition et planification" In: *RATP Cognition et Mobilité : Un séminaire d'échanges entreprise-recherche*. 195-201.

Casati, R. 2006 "The cognitive science of holes and cast shadows", *Trends in Cognitive Science*, 10, 2, 54-55.

Due to their peculiar nature, shadows and holes are a promising source of insight about the representation of physical objects in cognition. The article investigates the extent to which shadows and holes are represented as object-like.

Casati, R. 2006 "Common sense, philosophical and theoretical notions of an object: some methodological problems", *Monist*, 88,4, 571-599.

The paper deals with recent work on the role of objects in cognition and the methodological problems created by findings and theories in various strands of the cognitive sciences. The term 'object' is here meant to refer to spatially extended items that persist over time. The main theses of this paper are as follows. First, we should ideally consider the various notions and representations of objects and objecthood that emerge from the literature as components of something akin to the notion of internalized language (I-language) that is at the core of mainstream linguistics. There appear to be as many different I-representations of objects as there are fields of investigation, and this creates some interesting methodological problems. Second, it is important to assess whether these different notions may be traced back to a common ground of underlying principles. Existing unification attempts either underestimate the differences between the I-representations or pave the way to an eliminative position that would dispose of the variety of I-notions altogether. The paper builds on these previous attempts and proposes to use again an analogy from linguistics in order to show how commonalities and differences between the various I-notions can be accounted for. Third, this framework can allow us to make sense of some so far piecemeal analyses of the commonsense notion of an object.

Bulot, N., Casati, R., Dokic, J. 2006, « Représenter l'espace des objets physiques: La thèse de la dépendance réciproque entre l'identification des objets et celle des lieux », in C. Thinus-Blanc and J. Bullier, eds. *Agir dans l'espace*, Paris: Editions de la Maison des Sciences de l'Homme, 13-32.

A discussion of the traditional philosophical thesis of the mutual dependence between mental representations of physical objects and of places in the light of recent findings in the cognitive sciences on topographical representation and indexical representation. The thesis of mutual dependence is open to charges of circularity. We suggest that the circularity is problematic at the conceptual level but not at the perceptual level.

Casati, R., 2006 "Philosophy: What Is To Be Done?", *Topoi*, 25, 1-2, 25-28.

If, as it is assumed here, philosophy is pervasive and continuous with non-philosophical disciplines, if consequently this dialogue is above all highly interdisciplinary, tends to align itself with the standards of scientific disciplines, and generates strongly contextualised and localised philosophical problems, and if a certain social role is part of the nature of philosophy, then we can expect in decades to come increasingly articulated and interesting interactions between philosophers and non-philosophers that will be manifested in new professional figures.

Casati, R., Pasquinelli, E., 2005, "Is The Subjective Feel of 'Presence' an Uninteresting Goal?" *Journal of Visual Language and Computing*, 16, 5, 428-441.

A prime goal of virtual reality is to deliver a complete visual and sensorymotor duplicate of an object: a fully integrated haptic and visual set of stimuli that would make us feel as if we are in the "presence" of the real object in an ordinary situation. The goal is very ambitious, but what is a measure of success? A conceptual analysis of presence is much needed. We consider two case studies in turn. The tunnel effect case teaches us that actual stimulation is neither necessary nor sufficient to convey presence. The picture case teaches us that it is possible to learn how to interact with very impoverished stimuli and successfully compensate for poor stimulation. Research should be thus oriented not towards potentially useless and costly duplication, but towards the unexplored potentialities offered by new and complex interfaces.

Casati, R., 2005 "Is the object concept formal?" *Dialectica*, 58, 3, , 383-394 .

This review article explores several senses in which it can be held that the (actual, psychological) concept of an object is a formal concept, as opposed, here, to being a sortal concept. Some recent positions both from the philosophical and the psychological literature are analyzed: Object-sortalism (Xu), quasi-sortalist reductive strategies (Bloom), qualified sortalism (Wiggins), demonstrative theories (Fodor), and anti-sortalism (Ayers).

Casati, R., Varzi, A.C., 2005 "Esercizi di attenzione", in M. Belpoliti and G. Ricuperati (eds.), *Saul Steinberg (Riga, n. 24)*, Milano: Marcos y Marcos, 398-403.

A study of Saul Steinberg's drawings on shadows and reflections.

Casati, R. Dokic, J., 2005 "Sounds", *The Stanford Encyclopedia of Philosophy (Fall 2005 Edition)*, Edward N. Zalta (ed.), <http://plato.stanford.edu/archives/fall2005/entries/sounds/>

Distinguishes three main positions about the nature of sounds: the distal, the medial and the proximal view.

Casati, R., 2005, "Shadow tales of knowledge and power", in T. Sadowsky, ed. 2005 *Shadow Play – Schattenspiel*. Odense: Kunsthallen Brandts Klaedefabrik.

Bulot, N., Casati, R., Dokic, J., Ludwig, P. 2005 "Art et cognition: deux théories", in M. Borillo (dir.), *Approches cognitives de la création artistique*, Liège, Mardaga, 2005, p. 45-8.

Casati, R. 2004 "The shadow knows: a primer on the informational structure of cast shadows", *Perception*, vol 33, 11, 1385-1396.

I list relevant properties of cast shadows that the visual system could exploit (although it may not exploit). The study concerns various types of information that can be extracted from shadows by systems that are significantly like ours (including embodied artificial systems) in an environment that is significantly like ours.

Casati, R., 2004 "Methodological Issues in The Study of the Depiction of Cast Shadows", *Journal of Aesthetics and Art Criticism*, 62, 2, 163-174.

The relationships between art and cognition constitute a very wide set of largely unexplored and at times undefined or much too speculative problems. The field is narrowed down by imposing some constraints. It is proposed that the depiction of cast shadows, in its early history, could provide an ideal case study which conforms to the constraints. This paper addresses some methodological problems of the study of this case. A sample of relevant Renaissance images is discussed. A typology of depicted cast shadows is proposed upon which further empirical research could be built.

Casati, R., Varzi, A.C., 2004 "Counting the Holes", *Australasian Journal of Philosophy*, 82:1 (2004), 23-27 (special issue on "The Philosophy of David Lewis").

— Also in Frank Jackson and Graham Priest (eds.), *Lewisian Themes. The Philosophy of David K. Lewis*, New York: Oxford University Press.

Criteria for counting holes are as troublesome as criteria for counting objects. Argle claimed that holes supervene on their material hosts, and that every truth about holes boils down to a truth about perforated things. This may well be right, assuming holes are perforations. But we still need an explicit theory of holes to do justice to the ordinary way of counting holes—or so says Cargle.

Casati, R., 2004 "Introduction" to the special issue of *Sistemi intelligenti*, 15:3, on Ontology, 401-406 (in Italian).

A report on the state-of-the-art in ontology construed as a multidisciplinary effort in philosophy, computer science and cognitive science.

Casati, R., Varzi, A.C., 2004 'Sfondo e Figura' [Background and Figure], in *Rivista di estetica* (special issue in honor of Paolo Bozzi), 24:3, 42-44.

Background and figure have a delicate interplay, with philosophical implications.

Casati, R., 2003 "Representational Advantages", *Proceedings of the Aristotelian Society*, 281-298.

Descriptive metaphysics investigates our naive ontology as this is articulated in the content of our perception or of our pre-reflective thought about the world. But is access to such content reliable? Sceptics about the standard modes of access (introspection, or language-driven intuitions) may think that investigations in descriptive metaphysics can be aided by the controlled findings of cognitive science. Cognitive scientists have studied a promising range of representational advantages, that is, ways in which cognition favours one type of entity over another. The notion of representational advantage is investigated and some scepticism is expressed as to its appropriateness for use in descriptive metaphysics.

Casati, R. 2003 "Play it", in Zahraj to znovu, K. Císař a P. Kotátko (eds.), *Text a dílo: případ Menard*.

Making sense of token identity in playing the same piece of music over again.

Casati, R., 2003 "Qualia Domesticated", in A. Chatterjee, ed., *Perspectives in Consciousness*, Delhi: Munshiram Manoharlal, 33-42.

Consider the following argument (1) If panpsychism is true, then the hard problem of consciousness is solved (2) Physicalism is true (3) Physicalism entails panpsychism. We conclude that (4) The hard problem of consciousness is solved. This is a valid argument, and one whose conclusion has a certain appeal. What about the premisses? How exactly is panpsychism a solution to the problem of phenomenal consciousness? Who can take panpsychism seriously, and how can panpsychism be entailed by physicalism? A little forcing is assumed in suggesting to consider a philosophical argument whose conclusion is panpsychism. But I think the exercise is worthwhile, provided we spell out all the consequences of forcing.

Casati, R., 2003 "Immagine e conoscenza" ('Pictures and knowledge', in Italian), in G. Di Napoli, ed., *Il pensiero visivo*, Monza: ISA, 205-222.

Casati, R., 2003 "The Unity of the Kind Artwork", *Rivista di Estetica*, 23, 43, 3-31. (Earlier version, with replies by discussants, on www.interdisciplines.org/artcognition)

A defence of a meta-representational theory of artworks, accounting for the unity of the kind. Artworks are surmised to be artefacts that are produced with the intention of being recognised as having been produced with the intention of eliciting a conversation.

Casati, R., 2003 "The availability of large size from shadow: looking for hidden assumptions", *Perception*, 32, 1021-1023.

Size-from-shadow arguments requires tinkering in many a case as the geometry of the situation is often not determinate. A remark is made on the availability of indications about size in perceptual content.

Casati, R., 2003 "The Groundhog Day": La struttura temporale del mondo e i suoi effetti sulla teoria della conoscenza e l'etica", in M. Bresciani Califano, ed., *Le origini del tempo tra mito e logos*, Firenze: Leo S. Olschki, 117-127.

A philosophical exploration of the movie "The groundhog Day". If a subject is placed in a situation in which (approximately) the same events appear to recur in time, what can he know, and how can he act?

Casati, R., Varzi, A.C., 2002, "Events", *The Stanford Encyclopedia of Philosophy* (Fall 2002 Edition), Edward N. Zalta (ed.), <http://plato.stanford.edu/archives/fall2002/entries/events/>

A review of the philosophical literature on events.

Casati, R., 2002 "Topology and cognition", Encyclopedia Entry for the L. Nadel, chief ed., *Encyclopedia of Cognitive Science*, McMillan Nature Publishing Group, vol. 4, 410-417.

An overview of the role of topological primitives (connection, contact) in cognition.

Casati, R., Varzi, A.C., 2002 "Un altro mondo?" [A Different World? In Italian], *Rivista di estetica*, 19:1, 131-159.

A study of the idea that there is one single world and many world descriptions.

Casati, R., 2002 "The secret of shadow". *The Secret of Light and Shadow*, Frankfurt: Deutsches Architektur Museum.

Casati, R., 2001 "The Structure of Shadows", in A. Frank, J. Raper, and J.P. Cheylan, *Time and Motion of Socio-Economic Units*, London: Taylor and Francis, 99-109.

In the first part of the paper, I discuss an application of the descriptive tools of the theory of space representation I developed together with Achille Varzi to shadows, here conceived of as *holes in light*. Some adjustments of the theory seem necessary because shadows are dependent not only upon material

objects (as holes are) but also upon processes. In the second part, I assess the philosophical relevance of shadows, in particular the extent to which their lack of internal causal structure (their freedom from immanent causality) is to be considered a metaphysical problem.

Casati, R., Varzi, A.C., 2001 "That Useless Time Machine", *Philosophy*, 76, 581-583.

Dear "Time Machine" Research Group: if in order to travel to the past one has to have been there already, and if one can only do what has already been done, then why build a time machine in the first place? *A quoi bon l'effort?*

Casati, R., 2001 Review Article, P. Rossi, ed., *La Filosofia, Dialectica*, 55, 1, 74-84.

Casati, R., 2001 'Intuitive Topology', in M. Chadha and A. K. Raina (eds.), *Basic Objects: Case Studies in Theoretical Primitives*, Shimla: Indian Institute of Advanced Study.

Understanding of elementary topological equivalencies is impaired by preconceptions about the topological structure of ordinary objects, so that the equivalencies turn out to be counterintuitive. Here I will discuss some of these preconceptions, namely (1) the dominance of gestalt properties of the visual display of the configuration, (2) the neglect of holistic properties, (3) the dominance of transformations that preserve metric properties over those that preserve topological properties only, (4) the assumption that holes (empty regions of space) are objects of their own. These factors delineate an empirical research field, intuitive topology. An explanatory hypothesis for the preconceptions suggests that they are hard-wired.

Casati, R., 2001 "What the Internet Tells Us about the Real Nature of the Book", in G. Origgi (ed.) *Text-e. The Future of Text in Internet*, Palgrave, London. Previously appeared on www.text-e.org

The so-called "virtual world" is often described with the help of metaphors derived from ordinary discourse on perception and action. This should not be surprising, since virtual objects were partly conceived on the basis of these metaphors. Yet, it is not a given that these metaphors are appropriate; one might need to begin using different concepts and eventually to invent new ones, more appropriate to the phenomena they describe. It might even happen, as I shall show, that these new concepts will themselves be used in situations described by the discourses on perception, action and social behaviour in a way that so far seems perfectly natural, but that, in turn, might reveal itself to be entirely inadequate. One could use these new metaphors, born as they are of new practices and new usages, for the reinterpretation of the non virtual world. The subject of this piece is the metaphysics of the book. I shall look at the way in which the Web frees it from our inadequate conception of it. This emancipation, strangely, seems to involve an economic liberation.

Casati, R., 2001 "Cognitive Aspects of Gerrymandering", *Topoi*, 20, 203-212.

Some philosophical and cognitive aspects of political gerrymandering are investigated. The basic assumption of gerrymandering practices is that regions be connected. This assumption is questioned, as it seems to result for a cognitive bias for connectedness (a preference for unitary objects).

Casati, R., 2000 "Une note sur les milleux perceptifs" [*A note on perceptual media*], in P. Livet, ed., *De la perception à l'action*, Paris: Vrin 147-153.

Heider's solution to Meinong's problem: How is it that we see (hear) objects and not the medium?

Casati, R., 2000 "Space, Objects and Intuition", in S. Colonna, ed. *Space or Spaces*, Milan: Fondazione Carlo Erba, 123-133.

An analysis of the invalid pattern of inference: "There is a hole in these trousers; these trousers are in this cupboard; hence there is a hole in this cupboard".

Casati, R., Varzi, A.C., 2000 "True and False: An Exchange", in Anil Gupta and André Chappuis (eds.), *Circularity, Definitions, and Truth*, New Delhi: Indian Council of Philosophical Research, 365-370.

Classically, truth and falsehood are opposite, and so are logical truth and logical falsehood. In this paper we imagine a situation in which the opposition is so pervasive in the language we use as to undermine the very possibility of telling truth from falsehood. The example exploits Ramsey's suggestion to the effect that negation be expressed simply by writing the negated sentence upside down. The difference between '*p*' and '*~p*' disappears, the principle of double negation becomes trivial, and the opposition of truth and falsehood becomes a perfect vehicle for expressing duality—so perfect as to give rise to the question of what distinguishes truth from falsehood. Our moral is that this undermines the idea of inferential role semantics.

Casati, R., Varzi, A.C., 2000 "Topological Essentialism", *Philosophical Studies*, 217-236.

Extends mereological essentialism to topological essentialism and discusses some counterexamples.

Casati, R., Varzi, A.C., 1999 "I trabocchetti della rappresentazione spaziale" [Traps in Spatial Representation], *Sistemi Intelligenti*, 11, 7-28.

We list a number of a priori difficulties for theories of spatial representation. Target article, with commentaries.

Casati, R., 1999 "Formal structures in the phenomenology of movement", in J. Petitot, F.J. Varela, J.-M. Roy, eds., *Naturalizing Phenomenology: Issues in Contemporary Psychology and Cognitive Science*. Stanford: Stanford University Press, 373-384.

According to common sense, the Earth does not move. We do have such false beliefs, and we have many more about motion in general, not only about a particular moving object. Some of these arise quite directly from the underdetermination of perception. We are simply not equipped for perceiving the Earth as moving on its axis (over a sufficiently short lapse of time). We use objects that are still relative to the Earth, such as mountains or coasts, as a frame for locating perceptually moving objects, such as people or boats. The dialectic of rest and motion has a firm perceptual ground; our concepts err because our percepts do. But we can suspend our judgment as to the truth or falsity of these beliefs and consider their structure. In what follows I propose a reconstruction of the dialectic for rest and motion and show how far we can go in trying to classify kinds of motion. I shall rely on the notions of absolute and relative rest and motion, regiment them axiomatically, and show that we can capture very much of the complexity of the ontology of motion *without* even considering space and time.

Casati, R., 1998 Encyclopedia article: 'Qualia', in J. Proust, ed., *Vocabulaire des Sciences Cognitives*, Paris: Presses Universitaires de France.

Casati, R., 1998 Encyclopedia article: 'Images mentales', in J. Proust, ed., *Vocabulaire des Sciences Cognitives*, Paris:

Presses Universitaires de France.

Casati, R., 1998 Encyclopedia article 'Dreaming', *Routledge Encyclopedia of Philosophy*. London: Routledge. (Ms. 5 pp.)

Reviews theories of dreaming in the philosophical tradition since Descartes.

Casati, R., Smith, B., Varzi, A.C., 1998, Ontological Tools for Geographic Representation, in N. Guarino (ed.), *Formal Ontology in Information Systems*, Amsterdam: IOS Press, 1998, pp. 77–85.

This paper is concerned with certain ontological issues in the foundations of geographic representation. It sets out what these basic issues are, describes the tools needed to deal with them, and draws some implications for a general theory of spatial representation. Our approach has ramifications in the domains of mereology, topology, and the theory of location, and the question of the interaction of these three domains within a unified spatial representation theory is addressed. In the final part we also consider the idea of non-standard geographies, which may be associated with geography under a classical conception in the same sense in which non-standard logics are associated with classical logic.

Casati, R., Dokic, J., 1998, "Lo spazio del suono". *Rivista di Estetica* 38 (9):35-40

Casati, R., 1997 "Qu'est-ce qu'une horloge?" [What is a Clock?], in F. Recanati, ed., *Cahiers de philosophie analytique*, 1, 189-219. (In French.)

What is a clock? There is simple answer: a clock is an instrument for tracking and telling the time, and thus is an instrument for generating in clock-users true beliefs about the time; and most clocks track the time by measuring and counting time intervals. A clock is thus an epistemic instrument, as a magnifying lens or a book are: one uses it in order to improve the quality of one's epistemic states. In the class of epistemic instruments, clocks fall in the subclass of measuring instruments, together with rods and counters. I try to make clear what is the grain of truth in the thesis that clocks are instruments for tracking or measuring time (by considering cases in which it is not always so clear whether some given thing is or is not a clock).

Casati, R., 1997 "Les espaces de qualia" [Qualia Spaces], in J. Proust, ed., *Perception et intermodalité: Approches actuelles de la question de Mohyneux*. Paris: Presses Universitaires de France, 57-80. (In French.)

I discuss some recent approaches to the problem of explaining qualia, from Dennett's eliminativist proposal and Dretske's representationalism to Hardin's functionalism and Clark's physicalism. The two latter authors propose a structural analysis of qualia spaces such as the color circle. I examine the structural constraints on the notion of a qualia space and I raise some objections as to the explanatory power of Hardin's and Clark's proposals. In particular, I suggest that explanation is incomplete: even though it succeeds in ensuring the uniqueness of the functional or neurophysiological structure that is supposed to correlate with a given quality space, it does not succeed in ensuring the uniqueness of the qualia space that is supposed to correlate with a given functional or neurophysiological structure.

Casati, R., 1997 "Il linguaggio psicologico" [On Psychological Language], in D. Marconi, ed., *Tutto Wittgenstein*. Roma-Bari: Laterza, 193-239. (In Italian.)

A review of Wittgenstein's philosophy of psychology.

Casati, R., Varzi, A.C., 1997 'Spatial Entities', in Oliviero Stock (ed.), *Spatial and Temporal Reasoning*, Dordrecht: Kluwer Academic Publishers, 73-96.

Ordinary reasoning about space—we argue—is first and foremost reasoning about things *located in* space. This suggests that any theory concerned with the construction of a general model of our spatial competence must be grounded on a general account of the sort of entities that may enter into the scope of the theory. Moreover, on the methodological side the emphasis on spatial entities (as opposed to purely geometrical items such as points or regions) calls for a re-examination of the conceptual categories required for this task. Building on material previously presented in [1995c], in this work we offer some examples of what this amounts to, of the difficulties involved, and of the main directions along which spatial theories should be developed so as to combine formal sophistication with some affinity with common sense.

Casati, R., Varzi, A.C., 1996 "The Structure of Spatial Localization", *Philosophical Studies*, 82, 205-239.

What are the relationships between an entity and the space at which it is located? And between a region of space and the events that take place there? What is the metaphysical structure of localization? What its modal status? This paper addresses some of these questions in an attempt to work out at least the main coordinates of the logical structure of localization. Our task is mostly taxonomic. But we also highlight some of the underlying structural features and we single out the interactions between the notion of localization and other notions in nearby areas, such as the notions of necessity and possibility, or of part and whole. We show that in addition to mereology and topology a theory of localization is required in order to account for the basic relations between objects and space. We provide an axiomatization of the relation of localization, and discuss non-standard cases of localization, involving entities different from material objects.

Casati, R., Varzi, A.C., 1996, "Introduction" to the volume *Events* in the series *International Research Library of Philosophy*, Aldershot: Dartmouth, pp. i-xxxviii.

A map of various theoretical positions on events.

Casati, R., Varzi, A.C., 1996, "Holes", *Stanford Encyclopedia of Philosophy*. (ISSN 1095-5054). Second edition, 2003. <http://plato.stanford.edu/entries/holes/>

An overview of the main philosophical problems concerning holes.

Casati, R., 1995 "Temporal Entities in Space", in *Time, Space and Movement*. Toulouse: IRIT, 66-78.

In this paper I examine the spatial structure of temporal entities such as events and processes. I hypothesize that some spatial and temporal concepts are not completely domain-specific. I contend that this hypothesis, in short the *hypothesis of complementarity* or HC, is crucial in the heuristic of the investigation of spatial and temporal concepts, and that it ought to be used for importing into the unfocussed problem of temporal entities in space some results about the much neater problem of spatial entities in time. I discuss the cases of event movement and of object rotation, and I consider some broader hypotheses about the architecture of cognition that might back HC.

Casati, R., Varzi, A.C., 1995 "Basic Issues in Spatial Representation", *Proceedings of the 2nd World Conference on the*

Fundamentals of Artificial Intelligence 1995, Paris: Angkor, 63-72. reprinted in Carlo Penco and Giovanni Sarbia (eds.), *Alle Origini della Filosofia Analitica. Atti del Convegno Nazionale della Società Italiana di Filosofia Analitica*, Genova: Erga, 1996.

This is a preliminary report of part of a long term project on the foundations of spatial representation. In prospective, our aim is to unfold a general framework where the major results and open problems in this field can be set up and approached in a uniform fashion. Here, our concern is mainly with (i) analysing some basic notions that can be (or have been) used as primitives for this purpose (geometric points, places, regions, and bodies in the first place), and (ii) assessing the degree and significance in which the choice of any of such primitives may condition the resulting representation system.

Casati, R., 1995 "Philosophical Remarks 205-207: Phenomenology and Visual Space", in: R. Egidi and B. McGuinness, eds, *Wittgenstein: Mind and Language*. Dordrecht, Boston, London: Kluwer, 185-192.

An argument purporting to show that visual space is provided with absolute coordinates and an argument in favor of the demonstration of the existence of an absolute distance in the visual field. I scrutinize the first argument and defend some of Wittgenstein's points.

Casati, R., Soldati, G., 1995 "On the perception of abstract objects", in J. Hill, P. Kotatko, eds., *Karlový Vary Studies in Reference and Meaning*, Praga: Filosofia- Publications, 89-113.

Examines and taxonomizes several theories of abstraction in view of the criteria of abstractness they adopt. Defends a causal theory of the perception of abstraction, which loosens the constraints on the causal factor.

Casati, R., 1994 "The Concept of *Sehding* from Hering to Katz", in: S. Poggi, ed., *Gestalt Theory. Its Origins, Foundations and Influence*. Florence: Olschky, 21-57.

Historical reconstruction of the rise and fall of the paradigm of visual entities (phenomenal objects) in the psychology of perception at the beginning of the 20th Century. Discusses the influence of Husserl on Gestalt psychologists, providing unpublished material from his *Nachlass*.

Casati, R., Smith, B., 1994 "Naïve Physics: An Essay in Ontology", *Philosophical Psychology*, vol 7, 2, 227-247. [French translation in *Intellectica*, 17, 1993, 173-97].

The project of a 'naive physics' has been the subject of attention in recent years above all in the artificial intelligence field in connection with work on common-sense reasoning, perceptual representation and robotics. The idea of a theory of the common-sense world is however much older than this, having its roots not least in the work of phenomenologists and Gestalt psychologists such as Köhler, Husserl, Schapp and Gibson. This paper seeks to show how contemporary naive physicists can profit from a knowledge of these historical roots of their discipline, which are shown to imply above all a critique of the set-theory-based models of reality typically presupposed by contemporary work in common-sense ontology.

Casati, R., Varzi, A.C., 1994 "Sulla rappresentazione dello spazio" [On space representation], *AI*IA Notizie*, vol. 7, 3, 18-21. (In Italian)

The methodological anarchy that characterizes much recent research in artificial intelligence and other cognitive sciences has brought into existence (or resurrected) a large variety of entities from a correspondingly large variety of (sometimes dubious) ontological categories. The relation between philosophical issues and issues in A.I. is particularly evident in the field of space representation. A philosophical discussion of the primitives involved in different systems of spatial representation can help when it is necessary to choose between these systems. We discuss some attempts at reducing topology to mereology and mereology to topology. Our aim in this paper is to suggest some ways of reconciling such a luxurious proliferation of entities with the sheer sobriety of good philosophy.

Casati, R., 1994 "America!", *Stanford French Review*, 17, 129-132.

A metaphilosophical defence of the primacy of philosophy over the history of philosophy.

Casati, R., 1994 "Are Colour Predicates Vague Predicates?", *Acta Analytica*, 10, 129-134.

Do color predicates need to be vague predicates? This is indeed widely assumed, and the assumption receives confirmation from one simple intuition: of some parts of the spectrum between red and orange we cannot tell whether they are red or orange; of some parts of the spectrum, similar to others which are red, we would not say that they are red, and for some others the question seems to remain unsettled. This is what makes colour predicates like 'red' vague. Nevertheless, we can resist the assumption. I offer a revisionist proposal, according to which primary color predicates are assigned points on the continuum, and other color predicates are assigned open intervals, limited by the points corresponding to the primary color predicates. Though there is no last orange shade, no shade is such that it is left undecided whether it is orange or, say, red. Vagueness comes in only as soon as we deal with similarity between shades.

Casati, R., 1994 "Mentale Landschaften" [Mental Landscapes], *Kriterion*, 6. (In German.)

Why do we do philosophy? Because it is a very pleasurable contemplative activity.

Casati, R., 1994 "Introduction" to the French translation of Hermann von Helmholtz, *L'optique et la peinture*, Paris: ENSBA, 7-18. (In French).

Defends Helmholtz' theory of painting as a cognitive activity.

Casati, R., 1993 "United Colours of Wittgenstein", *Sistemi Intelligenti*, 5, 316-321. (In Italian)

Criticizes a defence of color dualism made by Walter Gerbino. All the cases that suggest the existence of apparent or subjective color alongside real colour are shown to arise from a confusion between metaphysics and epistemology.

Casati, R., 1993 "Gestaltpsychologie", *Enciclopedia Garzanti di Filosofia*. Milan: Garzanti, 430-431. (In Italian)

Historical presentation of Gestalt psychology in a philosophical perspective.

Casati, R., Varzi, A.C., 1993 "An Ontology for Superficial Entities I: Holes", in: N. Guarino and R. Poli, eds., *International Workshop on Formal Ontology and Conceptual Analysis in Knowledge Representation*. Padova: Ladseb-CNR, 127-

A presentation (including some novel developments) of the formal theory of holes adumbrated in the appendix of our book *Holes and Other Superficialities* [I:1994]. Several domains come to interact: ontology (holes are parasitic entities), mereology (holes may bear part-whole relations to one another); topology (holes are one-piece things located at the surfaces of their hosts); morphology (holes are fillable).

Casati, R., 1992 "Introduction" to the French translation of Helmholtz (see *Translations*, 1992a), *Philosophie* 33, 1992, 5-15. (In French.)

The allegedly Helmholtzian theory of unconscious inferences is to be found nowhere in Helmholtz's writings. Helmholtz conceives of the transition from sensation inputs to cognitive outputs as analogous to inference, without implying that the transition is conceptually driven.

Casati, R., 1992 "*De re et de corpore*". *Revue de Théologie et Philosophie*, 1992, 271-89. (In French.)

An argument which adapts Kant's proof of the absoluteness of physical space and purports to show that perceptual space is an individual. As concepts referring to one's body (*de corpore* concepts) include reference to portions of perceptual space, they can be both *de re* and internalist.

Casati, R., 1991 "Colori 1980-1990" [Colours 1980-1990], *Lingua e Stile*, 25, 513-61. (In Italian)

Complete review of the philosophical literature on colour (over 50 articles) in the decade 1980-1990.

Casati, R., 1991 "Wittgenstein, Phenomenological Laws, and McGinn's Interpretation", *Reports of the 14th International Wittgenstein Symposium*. Vienna: Hölder-Pichler-Tempsky, 80-83.

McGinn's discussion of Wittgensteinian phenomenological laws in his *The Character of Mind* does not enable him to draw a distinction between primary and secondary qualities. Wittgenstein's remarks are in fact compatible with a range of different ontological accounts of colour. It is therefore pointless to use them as premisses for an argument in favor of the primary/secondary distinction. The latter must be justified separately.

Casati, R., 1991 "Primary and Secondary Qualities: A Reply to Kienzle". *Studia Leibnitiana*, 22, 194-8.

B. Kienzle ("Primäre und Sekundäre Qualitäten bei John Locke", *Studia Leibnitiana*, XXI/1, 1989, pp. 21-41) has presented an interpretation of Locke's theory of primary and secondary qualities, arguing that these are identified by their epistemological role, and furthermore claiming that Alexander's account, which identifies color with textures of corpuscles, is overcome by his own account. I criticize Kienzle's attempt, by claiming that: (1) The definition Kienzle gives of secondary qualities does not allow him to avoid putting primary qualities in the same class as secondary qualities; (2) Kienzle's account is severely threatened by a confusion between the properties of determinable and determinate qualities; (3) The theory of secondary qualities he presents is either implausible or (if we can adjust it so that it makes sense) compatible with Alexander's proposal to identify (some) secondary qualities with corpuscular textures. In the course of the discussion, I propose a new criterion for demarcating primary from secondary qualities, namely: A property is secondary if it is possible that one of its monadic determinates (or a determinate such that no relation is built in the predicate expressing it) is disjunctive (down to a certain size). Otherwise a property is primary.

Casati, R., Dokic, J. 1991, "Brains In A Vat, Language and Metalanguage". *Analysis*, 51, 91-93.

Putnam's argument against the hypothesis that we are brains in a vat is formally reconstructed and shown to manifest several flaws, i.e.: (1) The lack of a precise distinction between object- and metalanguage; (2) The improper use of the Tarskian Convention T in one major premiss; (3) The lack of a definition of the meaning and scope of the operator 'in-the-image'; (4) The difficulty of specifying, under the hypothesis that we are brains in a vat, the status of the utterances of our sentences.

Casati, R., 1991 "Cornelius", in: H. Burkhardt, B. Smith, eds., *Handbook of Ontology and Metaphysics*. Munich, Vienna, Hamden: Philosophia Verlag.

Casati, R., 1991 "Stumpf", in: H. Burkhardt, B. Smith, eds., *Handbook of Ontology and Metaphysics*. Munich, Vienna, Hamden: Philosophia Verlag.

Casati, R., 1991 "Verschmelzung", in: H. Burkhardt, B. Smith, eds., *Handbook of Ontology and Metaphysics*. Munich, Vienna, Hamden: Philosophia Verlag.

Casati, R., 1990 "Dizionari e termini di colore" [Dictionaries and Colour Terms], *Lingua e Stile*, 1, 71-87. (In Italian)

An analysis of dictionary definitions of colour terms. An Aristotelian paradigm of definition (colour names are introduced by pointing to specifically coloured objects) is defended against the scientific paradigm used by most dictionaries.

Casati, R., 1990 "What is Wrong in Inverting Spectra?", *Teoria*, 10, 183-6.

The hypothesis of a chromatic spectrum inversion involves a series of consequences which plainly contradict an important set of features of our experience. This comes about because colour properties are holistically related to other visual properties. Thus spectrum inversions should in principle be detectible. [I now think that the argument of this paper only proves that if we accept chromatic inversions, then we should accept other inversions too; I do not believe that this would render any of these inversions detectible].

Casati, R., 1989 "Wittgenstein and Psychology: The Case of Transparency", *Reports of the 13th International Wittgenstein Symposium*, Vienna: Hölder-Pichler-Tempsky, 251-4.

Why don't we ascribe transparency to white? Are white transparent objects possible? Some interpretations of this question are discussed. An ontological account (no white transparent *object* exists) and a linguistic account ("transparent white" is not a well-formed term, in various senses of 'well-formedness') are ruled out. Subsequently a phenomenological explanation is offered, based on the perceptual properties of white surfaces and of transparent surfaces. White is unable to convey transparency because of its indifference to degrees of brightness. Westphal's interpretation, based on physical properties of white and transparent objects, is criticized. One conclusion to be drawn is that phenomenological explanation - some perceptual properties are *grounds* for some others - is distinct from description and from physical or conceptual explanation.

Casati, R., 1989 "Considerazioni critiche sulla filosofia del suono di Husserl" [Critical Remarks on Husserl's Philosophy of Sound], *Rivista di Storia della Filosofia*, 4, 140-58. (In Italian)

Although Husserl never worked out a systematic philosophy of sound, some hints can be found in published and unpublished works on perception. I provide here a reconstruction of Husserl's ideas, against the background of Brentano's theory of phenomenal qualities and Stumpf's theory of auditory perception. I try to point out that Husserl's analyses are at odds with most of our commonsensical intuitions because his concern is mainly with the problem of the 'constitution' of the material world. This concern constrains Husserl's account of the experience of sounds. Further developments, such as those of Schapp and Conrad-Martius, are presented, along with a selection of unpublished Husserlian texts.

Casati, R., 1987 "Magritte: variatio eidetica e invarianti rappresentative" [Magritte: Eidetical Variation and Representational Invariants], *Fenomenologia e scienze dell'uomo*, 5, 51-62. (In Italian)

Magritte's pictorial work is interpreted as a variety of conceptual analysis, performed through display of pathological or limit cases.

Editorial

Casati, R., 2022, *The Sailing Mind*. Springer. ISBN 978-3-030-89638-6.

Sailing is with us for thousands of years, and will be with us for as long there will be oceans and winds. Can we gain a fresh perspective on it, a viewpoint from the inside, by asking theoretically-minded sailors? I'm inviting leading philosophers, cognitive scientists, anthropologists and humanities scholars who happen to sail, and ask them to write a short piece on what they perceive of the intellectual complexities of sailing.

Santos, P.E, Casati, R. Cavanagh. P., 2017, Shadows. *Spatial Computation and Cognition*.

Casati, R., ed., 2011, *Disegno. Rivista di Estetica*, vol. 47.

Contributions by P. Maynard, J.M. Kennedy, A. De Rosa, G. Di Napoli, S. Oliveira, E. Corte-Real, M. Brusatin.

Casati, R., Jacomuzzi, A., Kobau, P. eds. (2009), *Esperimenti mentali. Rivista di Estetica*, vol. 42.

Casati, R., Varzi, A.C., eds. (2007) *Lesser Kinds. The Monist*, Vol. 90/3.

Metaphysicians tend to deal with large categories – substance, universals – and oversize issues-the nature of being, existence, necessity, causation. But there is plenty of room at the bottom for lesser categories and entities. Small or undersize problems can be interesting entry points for deep metaphysical enquiries. What is a sound? Do holes exist? Are events fact-like or object-like? Do shadows have a causal structure? What is the nature of the boundary that separates water from air – is it water, is it air? By looking into such questions, this issue of the *Monist* plans to explore the thesis that metaphysical concerns can be domain-specific without ceasing to be metaphysical in an important sense.

Barbero, C., Casati, R., Ferraris, M., eds. (2004), *Bozzetti. Rivista di estetica*, Vol. 25.

A volume in memory of Gestalt Psychologist Paolo Bozzi (1930-2003). Contributors: T. Agostini, T. Andina, A. Arbo, C. Barbero, M. Bertamini, I. Bianchi, V. Braitenberg, N. Bruno, R. Casati and A. C. Varzi, S. Cattaruzza, A. Costall with M. Sinico and G. Parovel, M. L. Dalla Chiara with R. Luciani and G. Toraldo di Francia, A. Dell'Anna, G. Derossi, M. Ferraris, D. Floreano, V. Girotto, D. R. Hofstadter, P. Kobau, M. Kubovy, P. Legrenzi, M. Losito, C. Magris, N. Miscevic, K. Mulligan, L. Pizzo Russo, L. Repici, A. Saccon, U. Savardi, B. Smith, L. Taddio, G. Torrenço, G. Vicario.

Casati, R., ed. (2003) *Ontologia. Sistemi intelligenti*, vol. 15:3.

A special issue presenting the state of the art on ontology. Contributions by Barry Smith, Werner Ceusters; Alessandro Oltramari, Stefano Borgo, Carola Catenacci, Roberta Ferrario, Aldo Gangemi, Nicola Guarino, Claudio Masolo, Domenico M. Pisanelli; David R. Koepsell; Maurizio Ferraris; Milena Nuti; Elena Pasquinelli; Achille C. Varzi; Luca Morena; Kevin Mulligan; Peter M. Simons.

Casati, R., ed. (1999) *Présences de la Gestalt, Intellectica*.

An interdisciplinary discussion of the presence of gestalt themes in contemporary cognitive psychology. Contributions by P. Bozzi, R. Luccio, S. Palmer, H. Simon, B. Smith, J.M. Morel, M. Peterson. With an introduction (in French).

Casati, R., Tappolet, C., eds. (1998) *Response-Dependence, European Review of Philosophy*.

Papers on secondary qualities, values, moral properties. Contributions by A. Byrne, M. Powell, A. Miller, H. Price, A. Denham, P. Menzies, P. Pettit, C. Wright, P. Railton, R. Wedgwood.

Casati, R., Varzi, A.C., eds. (1997) *Fifty Years of Events: Annotated Bibliography 1947–1997*, Bowling Green, OH: Philosophy Documentation Center, 402 pp. Online edition: <http://www.pdcnet.org/eventsbib.htm>

(preliminary edition preprinted as *Events: An Annotated Bibliography*, Milano: CUEM [Preprints in Logic and Philosophy of Language], 1994, 139 pp.)

This bibliography is concerned with recent literature on the nature of events and the place they occupy in our conceptual scheme. The subject has received extensive consideration in the philosophical debate over the last few decades, with ramifications reaching far into the domains of allied disciplines such as linguistics and the cognitive sciences. At the same time, the literature is so wide and widely scattered that it has become very difficult to keep track of all lines of development. This work seeks to overcome this difficulty by offering as comprehensive a record as possible, in the persuasion that good ideas are sometimes hidden in neglected work. The listing includes over 1600 entries by more than 900 authors. Most entries are annotated, sometimes including brief quotations and cross-references. Detailed Index of Subjects, Index of Names, and Index to Second and Subsequent Authors are included.

Reviews: H.E. Bynagle, ARBA 98, p. 580.

Casati, R., Varzi, A.C., eds. (1996a), *Events*, Aldershot: Dartmouth Publishing [The International Research Library of Philosophy, Vol. 15], 1996, xxxviii + 519 pp.

The topic of events has been extensively treated by philosophers under the impact of Davidson's 1967 paper 'The Logical Form of Action Sentences'. It is nowadays quite popular also among linguists and cognitive scientists, who often draw from philosophical material. This volume brings together for the first time a representative selection of papers that have indelibly marked the progress of the debate on this topic. Authors include G. E. M. Anscombe, E. Bach ,

K. Bach, J. Bennett, M. Brand, R. M. Chisholm, C. Cleland, M. J. Cresswell, J. E. Cutting, D. Davidson, L. Davis, F. Dretske, K. Gill, A. Goldman, P. M. S. Hacker, J. Higginbotham, T. Horgan, J. Kim, D. K. Lewis, L. B. Lombard, A. P. D. Mourelatos, T. Parsons, P. L. Peterson, W. V. O. Quine, J. J. Thomson. A comprehensive introductory essay (pp. xi–xxxviii) and a name index are included.

Casati, R., ed. (1995a) *Prosthetic Epistemology*, special issue of *The Monist*, vol 78, 2, 229 pp.

Philosophy has arrived at a rather sophisticated understanding of the nature of artifacts, on the one hand, and of the conditions for obtaining reliable knowledge, on the other. The theory of measurement provides some interesting examples at the intersection between these two domains. But a general account of epistemic artifacts such as clocks, rulers, microscopes (and also of lamps, books and maps) is still badly needed. This issue of *The Monist* includes contributions towards a general theory of those artifacts which process information, measure, and assist perception and reasoning. Original contributors include K. Lehrer, R. Hilpinen, R. Teichmann, F. Wilson.

Casati, R., Smith, B., White, G., (1994), *Philosophy and the Cognitive Sciences. Proceedings of the 16th International Wittgenstein Symposium*. Vienna: Hölder/Pichler/Tempsky., 488 pp.

Contributors include J. Searle, M. Boden, G. Rey, F. Jackson, N. Tennant, J. Haugeland, F. Dretske, E. Sosa, M. Tye, G. Bealer, F. Pelletier, A. Woodfield, M. Devitt, F. Recanati, J. Hintikka.

Casati, R., White, G. (1993), *Philosophy and the Cognitive Sciences. Preprints of the 16th International Wittgenstein Symposium*. Kirchberg am Wechsel: The Austrian Ludwig Wittgenstein Society, 616 pp.

Reports, White Papers, Policy Briefs

Gascuel, D., Quemper, F., Le Bras, Q., Mouillard, R., Levrel, H., Casati, R., 2024, *Changer de Cap. Pour une transition sociale-économique des pêches*. Bloom Association, Paris.

The study, based on the calculation of ten key indicators, measures the ecological footprint and economic and social performance of each of the fishing fleets operating on the Atlantic seaboard. The study provides the first reliable multi-disciplinary health status report for 70% of metropolitan France's fisheries.

(Multiple Authors), 2024, *The Plankton Manifesto - A call for Plankton-Based Solutions to address The Triple Planetary Crisis (biodiversity, climate & pollution)*. UN Compact.
https://ungc-communications-assets.s3.amazonaws.com/docs/publications/PlanktonManifesto_MG_DIGITAL-2.pdf

Despite their immense importance, plankton are under threat and remain poorly understood. The Plankton Manifesto calls for immediate global recognition and action to protect these vital organisms. It advocates for the adoption of "Plankton-Based Solutions" to benefit humanity and the environment, leveraging advances in DNA sequencing, bioinformatics, satellite monitoring, AI-assisted image analysis, and other cutting-edge technologies to enhance our understanding and stewardship of plankton. The Plankton Manifesto is a result of a collaborative effort, led by the United Nations Global Compact, that involved 30 international experts from leading institutions and industries worldwide. It will seek endorsements at key global environmental conferences, including COP29 on Climate, COP16 on Biodiversity, and the United Nations Ocean Conference in Nice, France, in June 2025.

Esteban-Cantillo, O. J, Abreu de Almeida, A., Bourgeois-Gironde, S., Wanek, E., Gurchani, U., Eveillard, D., Casati, R., 2024, *Dynamic Ocean, Dynamic Solutions: New multi-disciplinary approaches for marine conservation tools*. COP16 UN Convention for Biological Diversity (UN CDB), Colombia, Cali. Zenodo.
<https://doi.org/10.5281/zenodo.13992368>.

This paper was produced in the frame of the Horizon Europe EU-funded project BIOcean5D [1], by a team of researchers from different disciplines, to contribute towards a holistic and functional approach of marine biodiversity conservation tools. With the recent and ongoing progress of marine sciences, including genomics, digital imaging, remote sensing devices and bioinformatics, it is crucial to bring these developments to the policy arena, in a format decision makers can effectively use as tools to assess priorities for regions needing monitoring and protection. Embracing a large panoply of interdisciplinary tools, this Policy Brief paper leverages social sciences and international law knowledge to propose innovative protection directions, based on deep conceptual changes, to support realistic, fair and equitable approaches.

(Multiple Authors), 2024. *Venice Declaration for Ocean Literacy in Action*. UNESCO, Venice.
https://oceanliteracy.unesco.org/wp-content/uploads/2024/06/ENG_Venice-Declaration-for-Ocean-Literacy-in-Action.pdf

"The Declaration is designed to catalyze a new wave of action to establish Ocean Literacy in the spheres of education, science, policy, economics, and culture. By restoring and expanding humanity's understanding of the ocean, Ocean Literacy will empower communities to respect the marine environment and preserve ocean cultures around the world."

Casati, R., 2025. La Tour Albert : 21 étages pour le 21^e siècle. Notes pour une transition humaniste de l'habitat urbain. Online on *a-r-t*. <https://a-r-t.org/taxxi21>

Can a 1960 iconic residential Parisian building transition to the 21st century, adapt to climate change, in spite of (or thanks to) its official status of architectural landmark?

Reviews

Casati, R. (2015), review of Ben Blumson, *Resemblance and representation*. Cambridge: Open Book Publishers, 2014. In: *Australasian Journal of Philosophy*, 2016.

Casati, R., (1995) "Quattro categorie", review of Paolo Rossi, ed. *La Filosofia*, Torino, U.T.E.T. In: *L'Indice dei libri del mese*, 9, 44.

Casati, R., Voltolini, A., (1994a) review of M. Santambrogio, ed. *Introduzione alla filosofia analitica del linguaggio*, Bari: Laterza, 1992. In: *Acta Analytica*, 10, 166-95.

Casati, R., (1994b) review of R. Schantz, *Der sinnliche Gehalt der Wahrnehmung*. Munich, Vienna, Hamden: Philosophia Verlag, 1990, in: *European Review of Philosophy*, 1, 184-86.

Casati, R., (1990) review of P.M.S. Hacker, *Appearance and Reality*. Oxford: Blackwell 1987. In: *Paradigmi*, 24, 679-85. (In Italian)

Casati, R., (1989a) review of L.C. Hardin, *Color For Philosophers*. Indianapolis: Hackett, 1988. In: *Lingua e stile*, 4, 541-45. (In Italian)

Casati, R., Tappolet, C., (1989b) review of, F. Schier, *Deeper into Pictures*. Oxford 1987. In: *Studia Philosophica*, 48, 220-3.

Casati, R., (1989c) "Le 'Osservazioni sui colori' di L. Wittgenstein in una recente interpretazione", [Wittgenstein's Remarks on Colors in a Recent Interpretation. Critical Notice of J. Westphal, *Colour. Some Philosophical Problems from Wittgenstein*. Oxford: Blackwell, 1987], In: *Teoria*, 1, 251-5. (In Italian)

Casati, R., (1987) review of G. Frege, *Die Grundlagen der Arithmetik. Centenärausgabe*. Hamburg: Meiner. In: *Teoria*, 3, 1985, 210-11. (In Italian)

Casati, R., (1986) review of B. Smith, ed., *Parts and Moments*. München: Philosophia. In: *Fenomenologia e scienze dell'uomo*, 3. (In Italian)

Translations

(1993) K. Mulligan, "Proposition, State of Affairs and Other Formal Concepts in Husserl and Wittgenstein" / "Proposizione, stato di cose ed altri concetti formali nel pensiero di Husserl e Wittgenstein", *L'uomo, un segno*. Genova: Marietti, 41-64.

(1992a) (with Jérôme Dokic) Helmholtz, H. v., "Über die Natur der menschlichen Sinnesempfindungen" / "Sur la nature des impressions sensibles de l'homme" (1852), *Philosophie* 33, 1992, 16-32.

(1992b) A.J. Ayer, 1972, *Russell*. Milano, Mondadori.

(1989) G. Frege, *Logische Untersuchungen/Ricerche Logiche*, Milano: Guerini.

Software

Peano (with Claudio Beorchia)

Activities for learning elementary arithmetics

[Astrini](#) (with Greg Lomax)

A parametrizable pedagogical simulator of the Earth-Sun-Moon system.

Chronogeoscope (with Glen Lomax)

A GPS based educational clock. Web and Android versions.

CircleDraw (With Maurizio Giri and Elena Pasquinnelli)

Online training module 2019: "*Inégalités femmes-hommes dans la recherche*". CNRS, Mission pour la place des femmes. (Participation to scientific committee.)

Curated Exhibitions

2024, *Uncharted Waters: Seven Maps for Re-Thinking the Ocean*. Italian Academy, Columbia University (Curator).

2022, *Ocean 2.0*. Work by visual artist Alice Cuvelier. Ecole normale supérieure, Paris (Curator).

2002 *Geheimnis des Schattens. Licht und Schatten in der Architektur*. DAM, Frankfurt (Scientific advisor.)

2017-2018, *Science frugale (Frugal Science)*. ESPGG, Paris. (Scientific Advisor).

Media, documentaries, movies, theater, research videos

Werner Weick, 2004, *Viaggio nell'ombra*. Documentary with Roberto Casati. RTSI (Radio Televisione Svizzera Italiana)

Pierluca di Pasquale, 2010, *Stanza 88*. From a short story by Roberto Casati and Achille C. Varzi. RIFF, Rome Independent Film Festival.

Insurmountable Simplicities, by R. Casati and A.C.Varzi. Adapted and Directed by Natalie Glick. New York, Fringe Festival, 2010.

Dee, H.M., Kennedy, J., Casati, R., *Do lines disrupt Mooney faces with motion?*, <https://www.youtube.com/watch?v=CHVpeir3dDA>

To test people's vision, Craig Mooney devised two-tone pictures of faces. In Mooney faces, parts are strongly illuminated, parts are in deep shadow. His pictures were static. Motion helps vision find the faces. Mooney faces in negatives are hard to make out. Proper facial expression is lost. In outline, they are equally impossible. Adding a dark line to the border of a positive Mooney face can drop recognition to the level of a negative. Motion helps, but still leaves the face looking cartoonish and flat. Often the line is taken as part of a profile. A light line border of a negative also leaves it cartoonish.

The largest sundial in the world, 2017, R. Casati and G. Puccetti (NYU). Project DIAL-PSL.

Shot from atop Burgh Khalifa, whose shadow is followed during the day.

Cognition in the wind, 2018. R. Casati, R. Soldini. <https://www.youtube.com/watch?v=7TpY-AeXRNk>

A study of the different types of engagement sailors have with the boat and the marine environment. Features urban sketcher Simonetta Capocchi as she draws onboard activities and the bay of Ponza from atop the mast of *Kleronia*.

Looking for the Wind - Barcolana 2019 <https://youtu.be/YSTf73tGI4s>

In a calm, windless day, two thousand boats were looking for the best spot to start the 2019 Barcolana race. This time lapse, filmed by Roberto Casati aboard *Kleronia*, iconically shows the variance in the strategies followed by sailors. On that same occasion *Kleronia* carried at the Barcolana a message by a group of refugee artists who participated in the Rothko in Lampedusa exhibition organised by UNHCR at the Venice Art Biennial, sharing with sailors all around the world the principle that migration should be a choice and not a necessity. A UNHCR delegate was on board, and fifty boats heralded the UNHCR banner at the Barcolana.

Knowledge in the wind, 2020. <https://www.youtube.com/watch?v=9CJCSRa4wOg>

Documents the sea environment and on-deck activities of the crew of *Albatros*, a 67ft monohull, during the transatlantic crossing of Transat Arc 2019 (Las Palmas to Saint Lucia), in the framework of a research on wayfinding in ecological settings. This is the first full time lapse of a whole crossing, shot over seventeen days at sea at 1 frame per minute. It provides a window on how sailors past and present are able to harness the trade winds for crossing the Atlantic.

Viewpoints of sail. 2023. <https://www.youtube.com/watch?v=VlrcXGvITfE>

How many viewpoints does a sailboat embody? Surprisingly many. Viewpoints of sail shows a small selection of (sometimes conflicting) frames of references

that sailors must negotiate aboard.

The Kalamata Project. 2023. E. Grancher. <https://youtu.be/izoLPvbOzz0>

A meditation on migrations across the Mediterranean, recorded in the waters of the Kalamata shipwreck.

Sudden Darkness: The Shadow of the Moon moves on the cloud cover during the 2024 Eclipse (Buffalo).

<https://youtu.be/6kleNOqGy1M>

An observation movie by Roberto Casati: the overcast sky in Buffalo during the Apr 8th 2024 total solar eclipse hides the sun but reveals the shadow cast by the moon on the cloud cover. The shadow moves fast, creating an effect of sudden darkness. The movement of the shadow is visible.

Kanizsa's sphere <https://youtu.be/UobAX97Q73E>

The project was to render a 3d version of Kanizsa's triangle. You should be able to see a sphere - which is actually only computed by your visual system. Some of the sphere's boundaries are white on a white background, but you still see them. The project was executed under Roberto Casati's direction at IUAV, Venice, in 2004 by Nicolò Luppino, Claudio Marchese, Paolo Ruggeri e Mattia Scaggiante.

Articles for the general public

About 550 short articles in the Italian press on general issues related to philosophy and cognitive science (mainly for *IlSole24Ore*, leading economics newspaper.)

Media appearances

1995- Interviews on French, Italian, US media (mostly radio and webradio).

2018 TEDx Bari, *The Sea as an Elsewhere*. <https://www.youtube.com/watch?v=G51m4SypNqM>

Although the sea appears as the most hostile of spaces, almost a negative image of our adaptive environment, that has not prevented humans to face it and cross it, up to colonize all the lands and habitable islands in our planet. How could that happen? How can we define our spirit of adventure, and how was it modulated by the presence of the sea? How does the mind of sailors work?

2025 TEDx Versailles, *Repenser notre lien avec l'Océan au service de l'humanité* <https://youtu.be/tBllkxhtAcM>