

# Valeria de Paiva

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🌐 <http://vcvpaiva.github.io/>

<http://www.cs.bham.ac.uk/~vdp>

*Profile: Mathematician with strong industrial and academic background, and over forty publications. Project leader with a rare ability to get people from different technical backgrounds communicating and working together.*

## Education

- 1990 **PhD, Pure Mathematics**, *University of Cambridge*, Cambridge, UK.  
Thesis: The Dialectica Categories, supervisor: Prof M. J. E. Hyland
- 1985 **Part III Mathematical Tripos (MSc)**, *University of Cambridge*, Cambridge, UK.  
Lucy Cavendish College
- 1984 **MSc, Algebra**, *Pontifical Catholic University (PUC)*, Rio de Janeiro, Brazil.  
Thesis: The Hurwitz-Radon Transformations, supervisor: Dr D. Randall
- 1982 **BSc, Pure Mathematics**, *Pontifical Catholic University (PUC)*, Rio de Janeiro, Brazil.

## Work Experience

- Sep **Senior Research Scientist**, *Nuance Communications*, Sunnyvale, CA.  
2012–now Research, design and deployment of conversational systems. My first project here was on "living room" assistants such as Amazon's Alexa. A new project is on a car concierge.
- April **Senior Research Scientist**, *Rearden Commerce*, Foster City, CA.  
2011–2012 Design and deployment of sentiment analysis tools.
  - Sentiment analysis mechanisms, especially geared towards to reviews of hotels, using logical knowledge representation and ontologies, as well as statistical natural language processing modules.
- May **Search Analyst**, *Cuil, Inc.*, Menlo Park, CA.  
2008–2010 Design and deployment of mechanisms for testing quality of search results.
  - Effectively coordinated team of ranking, data mining and front-end engineers to achieve quality testing tasks.
  - Pre-screening of results when new data or algorithms are released.
  - User champion working across teams and boundaries to reach quality goals.
- Oct **Research Scientist**, *Palo Alto Research Center (PARC)*, Palo Alto, CA.  
2000–2008 Work on Logics for Natural Language Semantics, Knowledge representation systems, Evaluation of Semantic systems.
  - Logics of context for AI and other applications, for ARDA/DTO projects NIMD (Novel Intelligence from Massive Data, DARPA sponsored research) and IKRIS (Interoperable Knowledge Representation for Intelligence Support)
  - Ontology construction and formal models of ontology merging; mathematical models of context-based natural language and knowledge representation systems.
  - Construction, deployment and results analysis of test suites used for evaluation and regression testing for ARDA Bridge and Asker systems, mapping NL to KR.

- 1999–Oct 2000 **Visiting Scientist**, *Palo Alto Research Center (PARC)*, Palo Alto, CA.  
 Work on Linear Logic proof methods for construction of semantic representations for Natural Language, Glue semantics.
- 1996–2000 **Assistant Professor**, *University of Birmingham, School of Computer Science*, Birmingham, UK.  
 Research on Linear Functional Programming, Linear Logic and Type Theory applications
  - PI on EPSRC project xSLAM on explicit substitutions for linear functional programming.
  - Consultant to SRI International and UK Defence Research Agency on languages for secure pointer analysis.
  - Teaching of undergraduates and graduate courses; PhD supervision.
- 1989–1996 **Research Associate**, *University of Cambridge, Computer Science Laboratory*, Cambridge, UK.  
 Employed on various projects using formal tools:
  - Verification of proof assistants
  - Lexical Semantics for natural language
  - Semantics of (functional) programming languages
- 1982–1990 **Assistant Professor**, *Pontifical University of Rio de Janeiro, Informatics*, Rio de Janeiro, Brazil.  
 Full teaching and research position from 1989, on paid leave 1986–1988
- 1993–1996 **Consultant**, *SRI, Cambridge*, Cambridge, UK.  
 Project with UK Defense Department (DRA, Malvern) on languages for pointer analysis

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## Honors and Awards

- 2009–now Steering Committee of NASSLLI (North American Summer School in Logic, Language, and Information), Bloomington, Indiana
- 1999–now Honorary Research Fellow at the School of Computer Science, University of Birmingham, UK
- 2013–2015 Ciência sem Fronteiras Fellowship from CNPq, Brazilian Research Council.  
 2015 Member of the evaluation team for the INRIA Theme Programs, Verification and Proofs
- 2012–2016 Co-writer and proposer, GetFUN, Generalizing Truth-functionality, Marie Curie project PIRSES-GA-2012-318986 funded by EU-FP7 (January 1, 2013 - December 31, 2016)
- 2005–2006 Co-Principal Investigator, ARDA grant IKRIS: Interoperable Knowledge Representation for Intelligence Support, PARC, CA
- 1997–2000 Co-Principal Investigator, EPSRC grant xSLAM: The eXplicit Linear Abstract Machine, University of Birmingham, UK  
 1995 Co-writer, EPSRC grant proposal Authentication Logics: New Theory and Implementations, University of Cambridge, UK
- Thesis Committees PhD committee thesis for Andrew Barber (Edinburgh), Jean Leneutre (Paris), Torben Braüner (Aarhus), Alexandre Rademaker (Rio de Janeiro), Yakoub Salhi (Nancy).  
 PhD informal advisor for Gavin Bierman (Cambridge), Maria Claudia Meré (Rio de Janeiro).
- Outreach Member of the Scholarship Committee of the ACM-W since 2015.  
 Member of the SIGLOG conference committee, since 2015.  
 Career Profile in the Mathematical Association of America (MAA) <http://www.maa.org/careers/career-profiles/academia-teaching/valeria-de-paiva>

Math Awareness Month campaign of the American Mathematical Society [http://www.mathaware.org/mam/2015/highlighted/MAM%202015%20profile\\_dePaiva.pdf](http://www.mathaware.org/mam/2015/highlighted/MAM%202015%20profile_dePaiva.pdf).

*Wikipedia page*, [https://en.wikipedia.org/wiki/Valeria\\_de\\_Paiva](https://en.wikipedia.org/wiki/Valeria_de_Paiva)

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## Invited Talks

- May, 2016 *Intuitionistic Modal Logic: a personal view* Talk at Staford Logic Seminar, Stanford, CA, USA.
- September, 2015 *Portuguese Linguistic Tools: What, Why and How.* Invited talk at IBM Research, 2015, Rio de Janeiro, Brazil.
- August, 2015 *Modal Type Theory* Invited talk at Logical and Semantic Frameworks with Applications (LSFA) 2015, Natal, Brazil.
- June, 2015 *Lean Logic for Lean Times: Varieties of Natural Logic* Invited talk at Conference on Computing Natural Reasoning (CoCoNat), Vloomington, Indiana, USA.
- May, 2015 *Lean Logic for Lean times: Entailment and Contradiction (ECD) Revisited* Invited talk at 4th CSLI Workshop on Logic, Rationality & Intelligent Interaction, Stanford, CA, USA.
- March, 2015 *Intuitionistic Modal Logic: 15 years later* Invited talk at Berkeley Logic Colloquium, Berkeley, CA, USA.
- May, 2014 *Edwardian Proofs for Futuristic Programs and Personal Assistants* Invited Plenary Talk at North American Annual Meeting of the Association for Symbolic Logic, Boulder, CO, USA.
- June, 2012 *Dialectica categories' surprising application – mapping cardinal invariants* Invited Talk at XV Latin American Symposium on Mathematical Logic (SLALM 2012), Bogotá, Colômbia.
- March, 2012 *Edwardian Proofs for Futuristic Programs*, Invited Plenary Talk at Infinite Possibilities Conference, IPC2012, Baltimore, Maryland.
- January, 2010 *A Bridge not too far*, Talk given at SRI AI Seminar, Menlo Park, CA. Based on my work at PARC.
- July, 2009 *Adventures in SearchLand*, Talk given at PARC Forum, Palo Alto, CA. Based on my experience moving out of a research lab into a start-up environment.
- August, 2006 *Constructive Hybrid Logics and Contexts*, Talk given at Hybrid Logic Workshop, Seattle, WA. Based on my experience using logics for contexts in Natural Language formalisms.

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## Editorial Boards

- from 2002 Editorial Board of TAC, Theory and Applications of Categories, online journal.
- from 2004 Editorial Board of LOMECS, Logical Methods in Computer Science, online journal.
- from 2006 Editorial Board of Logica Universalis, a journal from Birkhauser Basel, Springer.
- from 2015 Editorial Board of IfCoLog Journal of Logics and their Applications, Colloge Publications.
- 2005–2012 Editorial Board of "Logic, Language and Information", Lecture Notes in Artificial Intelligence, Springer.

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## Recent Program Committees

- 2016 Logic in Computer Science (LiCS) 2016, New York, NY
- 2016 Advances in Modal Logic (AiML) 2016, Budapest, Hungary
- 2015 13th Conference on Typed Lambda Calculi and Applications (TLCA), Warsaw, Poland
- 2015 22nd International Workshop on Logic, Language, Information, and Computation (WoLLIC 2015), Bloomington, IN, USA, July 20-23, 2015 (PC chair)
- 2015 24th International Joint Conference on Artificial Intelligence (IJCAI), Buenos Aires, Argentina, July 25-31, 2015 (Senior Reviewer)
- 2014 Joint Logic in Computer Science (LiCS)–CSL(Computer Science Logic) 2014, as part of FLoC (Federated Logic Conference), Vienna, 2014
- 2013 CSL(Computer Science Logic) 2013
- 2012 North American Summer School in Logic, Language and Information (NASSLLI) 2012 (PC Chair)

I have also organized with colleagues, a collection of IMLA (Intuitionistic Modal Logic and Applications) workshops and a collection of NLCS (Natural Language and Computer Science) workshops, as well as several other meetings, such as a Dagstuhl Seminar on Linear Logic and Applications in 2000 and DannyFest, a celebration of Daniel G. Bobrow’s work in 2008.

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## Selected Publications

- Books *Inheritance, Defaults and the Lexicon*. Eds. Ted Briscoe, Valeria de Paiva and Ann Copestake. *Studies in Natural Language Processing*, Cambridge University Press, 1993, re-issued 2006.
  - Advances in Natural Deduction: A Celebration of Dag Prawitz’s Work*, Eds. Pereira, Haeusler and de Paiva, ISBN 978-94-007-7548-0, Springer, 2014.
  - From Quirky Case to Representing Space: Papers in Honor of Annie Zaenen*. Eds. Tracy H. King and Valeria de Paiva, CSLI Publishing, 2013.
  - Perspectives on Semantic Representations for Textual Inference*. Eds. Annie Zaenen, Cleo Condoravdi and Valeria de Paiva, *Linguistics Issues in Language Technology – LiLT*, vol 9, CSLI, 2013.
- Edited Works *22nd Workshop on Logic, Language, Information and Computation (WOLLIC 2015) Selected Papers*. Eds. V. de Paiva, R. de Queiroz, L. S. Moss, D. Leivant, A. G. de Oliveira, July 2015.
  - Third Workshop on Natural Language and Computer Science (NLCS’15)*. Eds. Makoto Kanazawa, Lawrence Moss, Valeria de Paiva, Epics July 2015.
  - Intuitionistic Modal Logic and Applications (IMLA 2011) Selected Papers*. *Journal of Logic and Computation*. Guest Editors Valeria de Paiva and Natasha Alechina, 2015.
  - Intuitionistic Modal Logic and Applications (IMLA 2008) Selected Papers*. *Information and Computation*. Guest Editors Valeria de Paiva and Brigitte Pientka: 209(12): 1435-1436, 2011.
  - Joint Proceedings of the Second Workshop on Natural Language and Computer Science (NLCS’14) & 1st International Workshop on Natural Language Services for Reasoners (NLSR 2014)*. Affiliated to RTA-TLCA, VSL 2014 July 17-18, 2014. Eds. Valeria de Paiva, Walther Neuper, Pedro Quaresma, Christian Retoré, Lawrence S Moss, Jordi Saludes.

Intuitionistic Modal Logic and Applications (IMLA 2013) Selected Papers. *Journal of Logic and Computation*. Guest Editors Valeria de Paiva, Mario Benevides, Vivek Nigam, Elaine Pimentel, *Electronic Notes in Theoretical Computer Science*, vol 300, 2013.

Elementis of Categorical Logic (CatLog 2010) Selected Papers. *Logica Universalis*. Guest Editors Valeria de Paiva and Andrei Rodin 7, 2013.

Workshop on Logic, Language, Information and Computation (WOLLIC 2006) Selected Papers. Guest editors G. Mints, V. de Paiva and R. de Queiroz. Special Issue of *Information and Computation*, 2009.

Chu Spaces: Theory and Applications. Guest editors Valeria de Paiva and Vaughan Pratt, Special volume of *Theory and Applications of Categories (TAC)*, Vol. 17, 2006.

Intuitionistic Modal Logic and Applications (IMLA) Selected Papers. *Journal of Logic and Computation*. Guest Editors Valeria de Paiva, Rajeev Goré and Michael Mendler, 2004.

Journal Papers Intuitionistic Modal Logic: A 15-year retrospective (with C. Stewart and N. Alechina). In *Journal of Logic and Computation*, Oxford University Press, 2015.

A linked open data architecture for the historical archives of the Getulio Vargas Foundation (with Alexandre Rademaker, Dário Augusto Borges Oliveira, Suemi Higuchi, Asla Medeiros e Sá, Moacyr Alvim). In *International Journal on Digital Libraries*, vol 15, issue 2–4, pages 153–167, Springer, 2015.

As Wordnets do Português (with Hugo Gonçalo Oliveira, Cláudia Freitas, Alexandre Rademaker, Livy Real, Alberto Simões). In *Oslo Studies in Language*, vol 7, issue 1, 2015.

Linear Logic Model of State Revisited. In *Logic Journal of IGPL*, vol 22, issue 5, pages 791-804, Oxford University Press, 2014.

Natural Number Objects in Dialectica Categories. In *Electronic Notes in Theoretical Computer Science*, vol 305, pages 53–65, Elsevier, 2014.

Intuitionistic N-graphs. In *Logic Journal of IGPL*, vol 22, issue 2, pages 274–285, Oxford University Press, 2014.

If, not when. (with Dick Crouch) In *Electronic Notes in Theoretical Computer Science*, vol 300, pages 3–20, Elsevier, 2014.

Categorical Semantics of Linear Logic for All. In *Advances in Natural Deduction*, (Eds Pereira, Hausler and de Paiva) pages 181-192, Springer, 2014.

Elements of Categorical Logic: Fifty Years Later. (with Andrei Rodin) In *Logica Universalis*, vol 7. issue 3, pages 265-273, Elsevier, 2013.

Bridges from Language to Logic: Concepts, Contexts and Ontologies. In *Electr. Notes Theor. Comput. Sci.* 269: 83-94, 2011.

Constructive Description Logics Hybrid-Style (with E. Hermann Haeusler and Alexandre Rademaker), in *Electr. Notes Theor. Comput. Sci.* 273: 21-31, 2011.

Basic constructive modality (with Eike Ritter), in *Logic without Frontiers—Festschrift for Walter Alexandre Carnielli on the occasion of his 60th birthday*. College Publications, 2011.

Deverbal Nouns in Knowledge Representation (with O. Gurevich, R. Crouch and T. H. King), in *Journal of Logic and Computation*, 18(3): 385–404, 2008.

An Institutional View on Categorical Logic (with Joseph A. Goguen, Till Mossakowski, Florian Rabe, and Lutz Schröder), in *Int. J. Software and Informatics 1*: 129-152, 2007.

Dialectica and Chu Constructions: Cousins?, in *Theory and Applications of Categories (TAC)*, volume 17, 127–152, 2007.

Preface to the special volume *Chu spaces: theory and applications*, (with Vaughan Pratt) in *Theory and Applications of Categories (TAC)*, volume 17, 1–9, 2006.

A Parigot-style linear  $\lambda$ -calculus for full intuitionistic linear logic (with Eike Ritter) in *Theory and Applications of Categories (TAC)*, volume 17, 30–48, 2006.

Intuitionistic Hybrid Logic (with T. Braüner), in *Journal of Applied Logic(JAL)*, volume 4, 231– 255, 2006.

Relating Categorical Semantics for Intuitionistic Linear Logic (with P. Maneggia and M. Maietti and E. Ritter), in *Applied Categorical Structures*, volume 13(1):1–36, 2005.

A short note on intuitionistic propositional logic with multiple conclusions (with Luiz Carlos Pereira), in *Manuscrito–Rev. Int. Fil* 28 (2), 317-329, 2005.

Modalities in constructive logics and type theories (with R. Goré, M. Mendler), in *Journal of Logic and Computation* 14 (4), 439-446, 2004.

Poset-valued sets or how to build models for linear logics (with A. Schalk), in *Theoretical Computer Science* 315 (1), 83-107, 2004.

Making ontologies work for resolving redundancies across documents (with John O Everett, Daniel G Bobrow, Reinhard Stolle, Richard Crouch, Cleo Condoravdi, Martin van den Berg, Livia Polanyi), In “Communications of the ACM”, volume 45, issue2, pages 55-60, 2002.

Lineales: Algebras and Categories in the Semantics of Linear Logic, In “Words, Proofs and Diagrams”, CSLI Publications, Stanford 2002.

On an intuitionistic modal logic (with Gavin Bierman, In *Studia Logica* 65 (3), 383-416, 2000.

Linear explicit substitutions (with Neil Ghani and Eike Ritter), In *Logic Journal of IGPL*, volume 8, isse 1, 7–31, 2000.

Computational Types from a Logical Perspective I (with N. Benton and G. Bierman), *Journal of Functional Programming*, 8(2):177-193, 1998.

Full intuitionistic linear logic (with M. Hyland), *Annals of Pure and Applied Logic*, 64(3):273-291, 1993.

Proceedings Multiple Conclusion Linear Logic: Cut Elimination and More (with Harley Eades III), in *Logical Foundations of Computer Science*, 2016.

Seeing is Correcting: curating lexical resources using social interfaces (with Livy Real, Fabricio Chalub, Claudia Freitas, Alexandre Rademaker), in *ACL-IJCNLP 2015*.

Explaining Watson: Polymath Style. (with Wlodek W. Zadrozny, Lawrence S. Moss), in *AAAI Publications*, Twenty-Ninth AAAI Conference on Artificial Intelligence, 2015.

Exploratory information extraction from a historical dictionary. (with Dario Augusto Borges Oliveira, Suemi Higuchi, Alexandre Rademaker, Gerard De Melo), in *IEEE 10th International Conference on e-Science (e-Science)*, 2014.

Extending a Lexicon of Portuguese Nominalizations with Data from Corpora. (with Cláudia Freitas, Alexandre Rademaker, Gerard de Melo, Livy Real, Anne Silva), in Computational Processing of the Portuguese Language, 2014.

Towards a rewriting framework for textual entailment. (with Vivek Nigam), in Pre-proceedings of the 9th Workshop on Logical and Semantic Frameworks, with Applications, Brasilia, Brazil, 2014.

Sense-specific implicative commitments. (with Gerard de Melo), in Computational Linguistics and Intelligent Text Processing, Springer Berlin Heidelberg, 2014.

NomLex-PT: A Lexicon of Portuguese Nominalizations. (with Livy Maria Real Coelho, Alexandre Rademaker), in LREC 2014.

Embedding NomLex-BR nominalizations into OpenWordnet-PT. (with Livy Maria Real Coelho, Alexandre Rademaker, Gerard de Melo), in Proc. of Global WordNet Conference, 2014.

OpenWordNet-PT: a project report. (with Livy Maria Real Coelho, Alexandre Rademaker, Gerard de Melo), in Proc. of Global WordNet Conference, 2014.

Contexts for quantification. In Proceedings of CommonSense, online only, 2013.

Where's the meeting that was cancelled? existential implications of transitive verbs. (with Patricia Amaral, Cleo Condoravdi, Annie Zaenen) In Proceedings of the 3rd Workshop on Cognitive Aspects of the Lexicon, Mumbai, India, COLING, 2012.

OpenWordNet-PT: An Open Brazilian Wordnet for Reasoning. (with Alexandre Rademaker, Gerard de Melo) In Proceedings of COLING (Demos), COLING, 2012.

Revisiting a Brazilian wordnet. (with Alexandre Rademaker) In Proceedings of 6th International Global Wordnet Conference (GWC), 2012.

Contextual Constructive Description Logics. (with Natasha Alechina) In Proceedings of ARCOE-11, 2011.

Intuitionistic Description Logic and Legal Reasoning (with E. Hermann Haeusler and Alexandre Rademaker), in DEXA Workshops 2011: 345-349, 2011.

Dialectica Fuzzy Petri Nets (with Apostolos Syropoulos), in "XVI Brazilian Logic Conference"(EBL), 2011.

Intuitionistic logic and legal ontologies (with E. Hermann Haeusler and Alexandre Rademaker), in Proceedings of the 2010 conference on Legal Knowledge and Information Systems: JURIX 2010: The Twenty-Third Annual Conference, 2010.

Using intuitionistic logic as a basis for legal ontologies (with E. Hermann Haeusler and Alexandre Rademaker), in Proceedings of the 4th Workshop on Legal Ontologies and Artificial Intelligence Techniques, 2010.

Designing Testsuites for Grammar-based Systems in Applications (with T. H. King), in Workshop on Grammar Engineering Across Frameworks (GEAF), Manchester, UK, August 2008.

Context Inducing Nouns (with Charlotte Price, Tracy Halloway King), in Coling 2008: Proceedings of the workshop on Knowledge and Reasoning for Answering Questions, Manchester, UK, August 2008.

Textual Inference Logic: Take Two, (with D. G. Bobrow, C. Condoravdi, R. Crouch, L. Karttunen, T. H. King, R. Nairn and A. Zaenen) Proceedings of the Workshop on Contexts and Ontologies, Representation and Reasoning, CONTEXT 2007.

PARC's bridge and question answering system, (with Daniel G Bobrow, Bob Cheslow, Cleo Condoravdi, Lauri Karttunen, Tracy Holloway King, Rowan Nairn) Proceedings of Grammar Engineering Across Frameworks, 2007.

Entailment, intensionality and text understanding, (with Cleo Condoravdi, Dick Crouch, Reinhard Stolle, Daniel G Bobrow) Proceedings of the HLT-NAACL 2003 workshop on Text meaning-Volume 9, 2003.

Categorical and Kripke semantics for constructive S4 modal logic, (with Natasha Alechina, Michael Mendler, Eike Ritter) Computer Science Logic, CSL 2001.

Extended Curry-Howard correspondence for a basic constructive modal logic, (with Gianluigi Bellin, Eike Ritter), Proceedings of Methods for Modalities, M4M 2001.

A term calculus for intuitionistic linear logic, (with Nick Benton, Gavin Bierman, Martin Hyland) Proceedings of Typed Lambda Calculi and Applications, TLCA 1993.

Linear  $\lambda$ -calculus and categorical models revisited, (with Nick Benton, Gavin Bierman, Martin Hyland) Computer Science Logic, (CSL) 1992.

Term assignment for intuitionistic linear logic (preliminary report), (with Nick Benton, Gavin Bierman, Martin Hyland) University of Cambridge, Computer Laboratory Technical Report 1992.

Abstracts Dialectica Categories, Cardinalities of the Continuum and Combinatorics of Ideals (with Samuel G. da Silva), Unilog, Istanbul, Turkey, 2015

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## Other skills

Familiarity with ML, Java, Python and C, Perforce, SVN, CVS, plus Mac OS, Linux and Windows

Good assimilator and presenter of technical material, for technical and non-technical audiences

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## Languages

English	Proficient	
Portuguese	Proficient	<i>(native speaker)</i>
French	Advanced	