Guillermo Badia, Ph.D

Research Areas

My research is focused on *logic*, and it has been primarily concerned with the semantical analysis (by both algebraic and purely model-theoretic methods) of non-classical logics. My main areas of interest are as follows: *fuzzy logics, model theory of fuzzy logics, residuated lattices, intuitionistic logic, relevant logic and mathematics done in a non-classical logical background*.

Competence Areas

I have competence in *epistemology, critical thinking* and *philosophy of logic/mathematics*.

Personal data

08. 09. 1989 Born in Havana (Cuba). Citizenship: Cuban.

Education

2013 – 2017 **Ph.D. Philosophy**, *University of Otago*, New Zealand, (Degree awarded in May 2017).

2008–2013 **Bachelor of Philosophy**, *University of Havana*, Cuba.

Ph.D Thesis

Title *The languages of relevant logic: a model-theoretic perspective*

Supervisors Dr. Zach Weber & Dr. Patrick Girard

Examiners Prof. Katalin Bimbó & Prof. Ed Mares

Positions

January 2019 – ? **Lecturer (equivalent to Assistant Professor)**, *School of Historical and Philosophical Inquiry, University of Queensland*, Brisbane, Australia.

January 2017 – December 2018 **Postdoc**, *Department of Knowledge-Based Mathematical Systems, Johannes Kepler University*, Linz, Austria.
Member of the FWF project *New Perspectives on Residuated Posets* headed (in Austria) by Assoc. Prof. Thomas Vetterlein.

Julius Raab Strasse 5-7/2525 – 4040 Linz (Austria)
(+43)68864933796 • *guillebadia89@gmail.com*
https://sites.google.com/site/guillermobadialogic/home

July 2017 – December 2017 **Research Assistant**, *Department of Theoretical Computer Science, Institute of Computer Science*, Prague, Czech Republic.
Funded by the GAČR project *Predicate graded logics and their applications in computer science* headed by Dr. Petr Cintula and Dr. Carles Noguera.

2014 – 2016 **Graduate Research Assistant**, *Department of Philosophy, University of Otago*, Dunedin, New Zealand.
Funded by the Marsden Fund Fast Start Grant *Models of Paradox in Non-classical Mereotopology* led by Dr. Zach Weber.

Publications (peer-reviewed)

J1 What is an inconsistent truth table? (co-authored with Zach Weber and Patrick Girard), *Australasian Journal of Philosophy*, 94 (3): 533-548 (2016).

J2 A Lindström-style theorem for finitary weak entailment languages with absurdity, *Logic Journal of the IGPL*, 24 (2): 115-137 (2016).

J3 The relevant fragment of first order logic, *The Review of Symbolic Logic*, 9 (1): 143-166 (2016).

J4 Bi-simulating in bi-intuitionistic logic, *Studia Logica*, 104 (5): 1037-1050 (2016).

J5 A remark on Maksimova's variable separation property in super-bi-intuitionistic logics, *Australasian Journal of Logic*, 14 (1): 46-53 (2017).

J6 Model definability in relevant logic, *IfCoLog Journal of Logics and their Applications*, 4 (3): 623-646 (2017).

J7 Infinitary relevant languages with absurdity, *The Review of Symbolic Logic*, 10 (4): 663-681 (2017).

J8 On classes of structures axiomatizable by universal d-Horn sentences and universal positive disjunctions (with Joao Marcos), *Algebra Universalis*, 79: 41 (2018).

J9 On Sahlqvist formulas in relevant logic, *Journal of Philosophical Logic*, 47(4): 673-691 (2018).

J10 Variable sharing in substructural logics: an algebraic characterization, *Bulletin of the Section of Logic*, 47(2): 107-115 (2018).

J11 On elimination of quantifiers in some non-classical mathematical theories (co-authored with Andrew Tedder), *Mathematical Logic Quarterly*, 64 (3): 140-154.

J12 Currying Omnipotence (with Andrew Tedder), *Thought: A Journal of Philosophy*, 7(2): 119-121 (2018).

J13 Fraïssé classes of graded structures (with Carles Noguera), *Theoretical Computer Science*, 737: 81-90 (2018).

J14 Incompactness of the $\forall_1$ fragment of basic second order propositional relevant logic, *Australasian Journal of Logic*, to appear.

P1 Saturated models in mathematical fuzzy logic (with Carles Noguera), *Proceedings of the International Symposium on Multiple-Valued Logic 2018*, IEEE Computer Society: 150-155 (2018).

Papers under review or in preparation (draft available)

J15 A Lindström theorem for intuitionistic propositional logic (with Grigory Olkhovikov, RUB), under review with *Notre Dame Journal of Formal Logic*.

J16 Syntactic characterizations of some classes of structures in mathematical fuzzy logic (with Vincent Costa, Pilar Dellunde and Carles Noguera), submitted to *Soft Computing*.

J17 A Lindström theorem in Many-Valued Modal Logic over a Finite MTL-chain (with Grigory Olkhovikov, RUB), submitted to *Fuzzy Sets and Systems*.

C1 A substructural logic for inconsistent mathematics (with Zach Weber), under consideration for the book *Dialetheism and its applications* edited by Adam Reiger and Gareth Young.

J18 Realizing Many and Few Types in Mathematical Fuzzy Logic (with Carles Noguera, ÚTIA), in preparation to be submitted to *Annals of Pure and Applied Logic*.

J19 Maximality of First-order Logics Based on Finite MTL-chains (with Carles Noguera, ÚTIA), in preparation to be submitted to *Journal of Symbolic Logic*.

E1 Fuzzy Logic, under preparation for *Internet Encyclopedia of Philosophy*.

Teaching Experience (TA)

2014 PHIL 312 Advanced Logic, First Semester, University of Otago.

2015 PHIL 105 Critical Thinking, First Semester, University of Otago.

2016 PHIL 105 Critical Thinking, First Semester, University of Otago.

2016 PHIL 102 Knowledge and Truth, Second Semester, University of Otago.

2017-2018 Discrete Structures, October– February, Johannes Kepler University Linz.

2018 Mathematics for Statistics II, March, Johannes Kepler University Linz.

2018 Algebra for Computer Science, March, Johannes Kepler University Linz.

Awards

2018 Postdoctoral Scholarship of the Czech Academy of Sciences.

2014 Otago Postgraduate Scholarship.

2013 Alan Musgrave Master Scholarship.

Talks

T1 "Inconsistent Model Theory", Research Seminar (Otago), March 2014.

T2 "The consistency of first order logic", Postgraduate Workshop (Otago), September 2014.

T3 "Löwenheim and Hanf numbers of the paraconsistent logic $L_{\Omega\Omega}$", Australasian Association of Logic, Christchurch, November 2014.

T4 "Paraconsistent Metaphysics", New Zealand Association of Philosophers, Christchurch, October 2014.

T5 "A Lindström theorem for relevant logic", Australasian Association of Logic, Sydney, July 2015.

T6 "Is there a standard model of relevant arithmetic?", Australasian Association of Philosophy, Sydney, July 2015.

T7 "Bi-intuitionistic logic has Maksimova's variable separation property", Otago Logic Group, July 2015.

T8 "Infinitary propositional relevant languages", Frontiers of Non-Classicality: Logic, Mathematics, and Philosophy, Auckland, Jan 26–29/2016.

T9 "Elementarity of classes of Routley-Meyer frames", Pukeko Logic Group, Otago, March 2016.

T10 "Model definability in relevant logic", Third Workshop, University of Alberta, Department of Philosophy, Edmonton, Canada, May 17th, 2016

T11 "A Lindström characterization of the intuitionistic topology on partial orders", Seminar on Universal Algebra, PrF UP v Olomouci, Czech Republic, February 21st 2017.

T12 "Relevant topologies on Routley-Meyer structures as coarsenings of topologies with clopen bases", Workshop "Non-classical solutions to the paradoxes", Munich Center for Mathematical Philosophy, Germany, February 26th 2017.

T13 "On some classes of structures axiomatizable by dual Horn formulas", 94th Workshop on General Algebra AAA94, Novi Sad, Serbia, June 2017.

T14 "Variable sharing in substructural logics: an algebraic characterization", Logica 2017, Hejnice Monastery, Czech Republic, June 2017.

T15 "Types and models in core fuzzy predicate logics", TACL 2017, Prague, Czech Republic, June 2017.

T16 "Many and few types in Abelian predicate logic", Workshop The Philosophy of Contra-Cassical Logics, UNAM, Mexico City, Mexico, September 2017.

T17 "A new logic for inconsistent mathematics", Workshop Liars, Curries and Beyond, UNAM, Mexico City, Mexico, September 2017.

T18 "The age of a system of graded relations", ManyVal 2017, Toulouse, France, November 2017.

T19 "Saturated Models in Mathematical Fuzzy Logic", IEEE ISMVL 2018, Linz, Austria, May 2018.

Reviewing Activities

Refereed articles for *Journal of Philosophical Logic*, *Synthese*, *Review of Symbolic Logic*, *Studia Logica*, *Mathematical Logic Quarterly*, *Fuzzy Sets and Systems*, *The Philosophical Quaterly*, *IfCoLog Journal of Logics and their Applications*, *The Australasian Journal of Logic*, *Logic Journal of the IGPL* and *Logique et Analyse*.

Reviewed articles for the *Mathematical Reviews* or the *Zentralblatt für Mathematik*.