SEAN C. EBELS-DUGGAN

Department of Philosophy,
Northwestern University
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EMPLOYMENT

Northwestern University
Lecturer in Philosophy (part-time), 2007-present

EDUCATION

Ph.D in Philosophy (Logic and Philosophy of Science Track)
University of California, Irvine, June 2007
M.A. in Mathematics, Boston College, May 2001
M.Litt in Philosophy, University of St Andrews (Scotland), November 1998
B.A. in Philosophy, Wheaton College (Illinois), May 1997

PRIMARY AREAS OF RESEARCH

Logic, Philosophy of Mathematics

PUBLICATIONS

"Relative Categoricity and Abstraction Principles" (with Sean Walsh, UCLA). *The Review of Symbolic Logic,* 8:3 (572–606), 2015.

"The Nuisance Principle in Infinite Settings". *Thought: A Journal of Philosophy*, 4:4 (263–268), December 2015.

"Abstraction Principles and the Classification of Second-order Equivalence Relations". *Notre Dame Journal of Formal Logic*, 60:1 (77–117), 2019.

"Deductive Cardinality Results and Nuisance-like Principles". *The Review of Symbolic Logic*, 14:3 (592-623), 2021.

"Identifying Finite Cardinal Abstracts". *Philosophical Studies,* 178:5 (1603-1630), 2021.

"On Number-Set Identity: a study". *Philosophia Mathematica*, 30:2 (223-244), June 2022.

"What is the aim of (contradictory) Christology?" In Jonathan Rutledge (ed.), *Paradox and Contradiction in Theology*, Routledge Academic. (33-51), 2023.

"Explicit Abstract Objects in Predicative Settings" (with Francesca Boccuni, University Vita-Salute San Raffaele), *Journal of Philosophical Logic* 53:5 (1347-1382), 2024.

WORKS IN PROGRESS

"Abstract Objects and Deep Extensions" (Resubmitted)

Abstract: The theory of abstract objects suggested by Frege's *Grundlagen* privileges extensions as the fundamental abstract object, and then identifies all (other) abstract objects with a certain kind of extension, which I call deep extensions. But Frege's theory of extensions is inconsistent. The natural way to recover a consistent theory of deep extensions is to use schematic abstraction principles, embedded in second-order logic with predicative- or Δ^1_1-comprehension. I extend the results of Heck and Walsh to show that a robust schematic theory of abstract objects with deep extensions is consistent. However, I also show that one cannot systematize abstract objects as deep extensions in the way Frege apparently envisioned. Nor can one systematize them according to Cook and Ebert's neo-Fregean Equivalence Class Identity Axioms.

"The Stability of Well-founded Fregean Extensions" (In preparation)

Abstract: Set theory mostly presumes that the universe of sets is well-founded, but most justifications for this presumption are pragmatic. On the other hand, there is a tradition following Bertrand Russell in grounding the structure of the set theoretic universe on either a logical theory of propositions or an analysis of the concept of set. This paper demonstrates that within the context of Fregean set theory, the well-founded sets are distinctive for another reason: theirs is the only structure preserved no matter which objects are designated as sets. This connects a Tarskian conception of logic as the realm of the permutation invariant with Zermelo's categoricity theorem. It also answers a question due to Roy Cook about relatively categorical characterizations of Fregean abstraction principles.

"Recovering mathematical structure from vague predicates" (In preparation)

Abstract: Color predicates, to take a well-worn example, are vague. This patch of blue is more purple than the second patch, but it is still blue. Keep this up and you'll call purple things blue, which they are not. But of course we could add another word, and say that now we have blue, indigo, and purple. Adding "indigo" is an example of moving to a language with greater specificity. But of course, the trouble repeats.

What is curious is that when characterizing vagueness, we often resort to further specification, not to eliminate, but to emphasize the vagueness. "Imagine a color which is just a shade darker than our original sample", etc. Additionally, in the case of color words, we are lucky, in that we can move to a language of maximal specificity: the language of real numbers, interpreted as reflective wavelengths. Something is lost in this move, of course, and it depends on the very happy accident that colors are determined by reflective wavelengths. This paper addresses several of the questions that arise in light of these observations. Is there always a language of greater (or even maximal) specificity available? Does a language of maximal specificity "disconnect" from the original language, in the way that the language of real numbers disconnects from the color language? In particular, we will address whether the structure of a dense linear order can be recovered from predicates exhibiting the kind of vagueness we observe in color terms.

"Frege Arithmetic and Plural Predicative Explicit Logical Objects" (In preparation, joint with Francesca Boccuni, Vita-Salute San Raffaele University, Milan)

Abstract: Theories of explicit abstract objects as explored by Zalta (and others) can be made both consistent and to interpret second-order Peano Arithmetic (PA^2), but with significant drawbacks. One is that they don't use the elegant route to PA^2 that Frege discovered: by deploying HP, an abstraction principle constraining identity conditions on numbers. This paper explores the prospects for following Frege's trail in the wilderness of explicit abstract objects. Certain theories admitting *two* kinds of second-order variables are shown consistent, we explore which of them clear Frege's hidden path.

PROFESSIONAL AND DEPARTMENTAL SERVICE

Northwestern University:

Freshman Advisor to 14-16 students (2010-11, 2012-13, Fall 2013, Fall 2014, Fall 2015, Fall 2017, 2018, 2019, 2020).
Fellow, Chapin Residential College, Northwestern University (2015-present)
Philosophy Department: Logic Coordinator (2007-9, 2020-present)
Undergraduate Committee (2008-9, 2010-present)
Undergraduate Thesis advisor to:
- Matthew Kwon (Fall/Winter 2012-13, Philosophy)
- Alberto Takase (Fall/Winter 2015-6, Mathematics)
- Michael Hamburger (Spring/Fall 2016, Philosophy)

Director of Undergraduate Research Summer Project for:
- Erik Baker (Summer 2015, Philosophy/History).

Research Director and mentor to Maria Galaviz Huerta under Northwestern Undergraduate Research Assistant Program, Summer 2019.
Research Director and mentor to Leon Sommer-Simpson and C. Will Hopkins under Northwestern Undergraduate Research Assistant Program, Summer 2021.
Ph. D committee member for:
- Alexander Dolnick, (Philosophy, University of Illinois-Chicago, 2012).

Referee for *Journal of Philosophical Logic*, *Philosophia Mathematica, Erkenntnis, Review of Symbolic Logic, Synthese*, and for Acumen Publishers, Ltd.

PRESENTATIONS (invited where specified)

"The Logical and the Mathematical" (Invited)
Abstractionism 2, University of Connecticut, Storrs, August 10, 2023
"Recovering Mathematical Structure from Vague Predicates" (Invited)
2022 Central APA/ASL meeting, Chicago, February 2022
"On Unexpected Quantity" (joint with Stanley Chang)
Midwest Philosophy of Mathematics Workshop, University of Notre Dame, November 2021.
"Logic and Mathematics: neo-Fregeanism after 20 years." (Invited)
Abstractionism 2.0 Conference (University of Connecticut, Storrs, May 2020 Postponed/cancelled)
"Logicality, Zermelo's theorem, and well-founded extensions."
ASL North American Meeting (University of California, Irvine, March 2020 (cancelled))
"Identifying cardinal abstracts via embeddings into induced models"
ASL North American Meeting (Western Illinois University, Macomb, IL, May 16-19, 2018)
"Ordinals, Abstraction, and Cardinality Requirements in Second-Order Logic"
ASL-APA Joint Meeting, Special Session on Logicism, March 2-5, 2016.
"Relative Categoricity and Abstraction Principles"
Abstraction: Philosophy and Mathematics Workshop, University of Oslo, May 22-24, 2014. (Joint work with Sean Walsh, University of California, Irvine)
"On Gödel's 1931 footnote on the 'true source of incompleteness'"
Logic group workshop, University of Notre Dame, April 26, 2013.
"Norms and Self-consciousness", ISSCSS, University of Latvia, Riga 2010
"Why is Arithmetic Incomplete?", University of Chicago Formal Philosophy Workshop, 2009
"Why is Arithmetic Incomplete? Some minor results"
Midwest Philosophy of Mathematics Workshop, University of Notre Dame, 2008
"Eliminating Logical Knowledge", Northwestern University, 2007
"The Inertness of Logical Form", University of Illinois-Chicago, 2006

"On the Uses of Dedekind's Theorem",

Midwest Philosophy of Mathematics Workshop, University of Notre Dame 2002

TEACHING EXPERIENCE

Introductory:

- First Year College Seminar: The self (F24)
- First Year Writing Seminar: Philosophy of Time (W24)
- First Year Writing Seminar: Skepticism and Common Sense (W23)
- First Year College Seminar: Love and goodness (F20)
- First Year Seminar: Is goodness out of this world? (F19)
- First Year Seminar: Augustine's *Confessions* (F18)
- First Year Seminar: Why do we do what we do? (F17)
- First Year Seminar: Desire and mind (S17)
- First Year Seminar: Mind and morals: excluded voices (F15)
- First Year Seminar: Philosophy off the beaten path (F14)
- Paradoxes in Logic and Metaphysics (W14)
- Freshman Seminar: Morality and objectivity (F13)
- Freshman Seminar: What do you believe and why? (F12)
- Scientific Reasoning (S12, S17)
- Elementary Logic I (F07-8, F10-3, F15, F18-21, F24)
- Freshman Seminar: Geometry and Reality (F10)
- Elementary Logic II: metalogic (fulfills grad. req.) (W08-9, 19)
- Elementary Logic II: non-classical logic (fulfills grad. req.) (W20-4)

Upper-level Undergraduate and Graduate:

- First Year Graduate Proseminar: *A priori* Knowledge (F17-W18)
- Wittgenstein (F16, S24)
- The Problem of Universals in Medieval Philosophy (S16)
- Set Theory (S15, W25)
- Advanced Logic (alternating topics): (S09, W11, F14, S21, S23)
- Philosophy of Mathematics (W13)
- Logic and Anti-Realism (S12)
- Classics of Analytic Philosophy (F07)
- Several independent studies on various topics, including:
    - Philosophy of Mathematics (F24)
    - Philosophy of Time (W24)
    - Set Theory (W14)
    - Philosophy of Geometry and Set Theory (F13)
    - Logic (S08)